The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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"I.C.I." and Industrial Peace

FROM many sides there are movements for the establishment of a permanent peace in industry; from the workers' as well as from the employers' side this is recognised as the essential condition for the re-establishment of trade at home and the recovery of our trade abroad. Happily, in the chemical industry there has been, even through the anxious period of the strike, a remarkable measure of co-operation in keeping works in regular operation, and one of the aims of Imperial Chemical Industries, Ltd., is not merely to preserve this within the boundaries of the industry but to impress its importance on every trade in the country.

In a collected volume of articles dealing with the various activities and interests of Imperial Chemical Industries, there is a most timely article on "The combine and its workers," an advance copy of which has been forwarded to us. In this it is pointed out that since the war most of our leading industries have suffered severely, both in lost working-days and lost markets abroad, from an epidemic of internal disputes, and the nation must discover a lasting cure for the disease of industrial unrest if its trade is to survive in the markets of the world. Sir Alfred Mond has already clearly pronounced in favour of a league of industrial peace as powerful as the League of Nations, based on the principle of arbitration for industry at large. It is noticed in the article as an interesting point that at a time when so much publicity is being given to the question of industrial peace, almost equal publicity should be given to the modern tendency towards great trade combines and to the effect on the worker, on trade, and on the nation at large. In the course of the discussion many weighty opinions have been expressed that such fusions as Imperial Chemical Industries will prove to be peacemakers in the best sense, and that in them both employer and employed will find the solution of industrial trouble.

In an interesting historical survey it is shown in the article that while all other leading industries have suffered, some severely and others more slightly, from post-war industrial disputes, the heavy chemical industry has been singularly immune from any internal disputes for a long period of years. Brunner, Mond and Co., for example, have had complete freedom from serious strikes during the whole of the 52 years of their history, while the Scottish factories of Nobel Industries, Ltd., have been similarly favoured. Kynoch's factory of Nobel's has had no internal dispute since 1891, and the United Alkali Co. and British Dyestuffs Corporation have equally satisfactory careers of industrial peace. "This gratifying result," it is truly stated, "is due entirely to the consideration and fair treatment which those in control of the four companies have always accorded to each and every one of their employees. Moreover, the spirit of justice and goodwill which has animated those in control has been faithfully observed and translated by the managers and by those of the local staffs whose daily task brings them into constant and direct touch with the workpeople. The companies and their managers have always realised that a contented worker was their best asset, and they have always aimed at doing the right thing by him and at giving all possible advantages to their workpeople. The will for peace was there in the first place, and it has been successfully carried into practice. Such is the reason for the splendid record of the four companies on the labour side. All four firms have always made a point of securing the best possible wages and conditions for their workers and of ensuring that any worker who might have a complaint should have full access to the management and a prompt and fair hearing of his case. By such means the industry has been kept free from internal strife, and there is every reason to believe that the future, as regards the labour side, will be even happier than the past." It is interesting to hear that Imperial Chemical Industries "has the advantage of placing before its thousands of employees a thoroughly considered, organised, practical and progressive scheme which cannot fail to be beneficial to them and to the industry generally. Details of that

scheme can hardly be given here, but the history of the four individual companies is sufficient proof that it will be drawn up in a spirit of justice, fairness and goodwill, and that it will constitute a workers' charter which will stand as a shining example to employers and employed in every other great British and Imperial industry." "Stand together, work together, and benefit together" will be the slogan which it is confidently predicted will carry the company to an unparalleled period of prosperity.

Coal and Chemistry

It was pointed out in the last issue of The Chemical Age that a perusal of the report of the Fuel Research Board indicated that a solution of the problem of the low-temperature carbonisation of coal was not so remotely distant as frequent disappointments in the past might have led the scientific public to believe. Since then two events of the first importance in regard to the general question of the economic utilisation of coal have occurred. Lt.-Col. J. T. C. Moore-Brabazon, M.P., Permanent Secretary to the Ministry of Transport, has resigned his office in order to become chairman of Sensible Heat Distillation, Ltd., the company controlling the L. and N. process of coal distillation. That a man holding a high post in the Government should leave it to take up an industrial appointment is sufficiently striking; that the appointment in question should be connected with a branch of industry such as coal distillation, which has been the centre of scientific and technical interest for some years past, is still more striking. It is natural for the public to invest such an event with considerable importance.

Still more interesting is the announcement that three of the directors of Imperial Chemical Industries, Ltd. —Col. G. P. Pollitt, Mr. B. E. Todhunter, and Sir Harry McGowan—have joined the board of International Combustion, Ltd., which, it is said, intends forming a merger of coal, fuel, and power companies. Details are lacking, but it has been suggested that important developments in regard to low-temperature carbonisation are foreshadowed. The news is tantalisingly sparse, but it holds out possibilities of a most interesting kind. The liaison thus effected between the chemical industry and the combustion experts in this country should lead to results of the highest value. If only for the suggestion which it offers of an exchange of technical information, this episode may be a very significant one in modern industrial history—second only in importance, perhaps, to the formation of Imperial Chemical Industries. The reasons which have led to these additions to the board of International Combustion, Ltd., offer an interesting field for speculation, but it would be wise to postpone this until further information is made public. Apart from matters directly connected with these recent events, it seems worth while to call attention to the position of the coal industry as a whole. For the time being it seems in a fairly peaceable state. The end of the strike is not, however, likely to be the end of all the difficulties confronting it. If it is to be raised to a condition of prosperity, drastic changes, not only in the industry but in the methods of utilising the product will be necessary—changes in which the most important parts will be played by the chemist and the engineer. A solution of the problem of the most economic utilisation of coal—whether by low-temperature carbonisation, hydrogenation, or otherwise—is bound, not only in regard to the production of substances of chemical importance but in other directions, to have very striking effects on chemical industry in general. On this account, any step which seems to lead, however remotely, to the formation of a link between the industries of coal and chemistry is to be welcomed. The most remarkable aspect of the developments which have occurred in British industry within the last few months is the rapidity with which they have followed one another. It is clear that a policy of great breadth and vigour, based on a careful study of modern science and industrial economics, is being carried to its logical conclusion. Fully applied over the whole field of Imperial resources, it may lead, much sooner than at present seems possible, to a period of great prosperity.

Chemical Exports in 1926

The Board of Trade Returns for December are always the most interesting of the year because they enable a comparison to be made not only with the corresponding months of the previous two years but also with the complete figures for those years. The monthly figures of chemical exports and imports are given in detail in this issue. The total annual figures for 1926 are naturally heavily affected by the prolonged strike, but for which, it is reasonable to speculate, the downward tendency would at least have been arrested, even if no marked increase had been shown. The total exports of chemicals (other than drugs and chemicals) for 1926 are down to £13,868,917, as compared with £15,726,931 in 1925, and £17,672,280 in 1924, a drop in two years of nearly four millions sterling. In several details, however, there are increases. Sulphuric acid, for example, is up substantially over 1925 and 1924; so are tartaric acid, bleaching powder, and miscellaneous coal tar products. Anthracene, though a little below the 1925 figure, is nearly £5,000 higher than in 1924. Benzol and toluol, at £37,583, show a considerable increase from £14,436 in 1925, but a decrease from £91,878 in 1924. Glycerine is considerably above the figure of both years. Ammonium chloride has declined from £122,450 in 1924 to £87,239 in 1926, while ammonium sulphate has decreased from £3,720,902 in 1924 to £1,939,586 in 1926. Some of the items in the latter are notable. The exports to France, which in 1924 stood at £391,970, dropped in 1926 to £13, which suggests a lost market. Spain and the Canaries, a consistently big consumer, imported little more than a third of the 1924 total, and Dutch East Indies and Japan little more than half.

One bright spot in the returns is found in drugs, medicines, and medicinal preparations. The total exports have advanced over the figures both for 1924 and 1925, and stand at the substantial sum of £3,212,630. This quite bears out what has been said recently as to the improving reputation and growing demand for British drugs abroad. An interesting testimony reached us only the other day from a university mission in one of the Dominions, where both the quality and the prices of the products of a

British house were found to be a distinct improvement on previous experience. Painters' colours and materials, again, show a small but consistent increase, and the present exports figure approaches four millions sterling. Exports of dyes and dyestuffs declined to £701,756 in 1926, as compared with £1,010,982 and £918,867 in the previous two years. Naturally, with decreased exports, one looks for increased imports. As between 1924 and 1925 there was a decline, but in 1926 the chemical imports rose from £14,386,493 to £15,445,896.

On the whole the chemical trade figures for 1926 are certainly not worse than might be expected for such an abnormal year. But the increase in imports and the decrease in exports must obviously be arrested, and the figures for the ensuing few months will be watched with considerable interest. A marked improvement is not to be expected immediately, for the effects of the long stoppage are bound to linger on for some time. What is most to be desired is the beginning of a steady climb, and such a movement should become noticeable within the early months of the present year.

Pure Chemistry at Mellon Institute

ACCORDING to Dr. Edward R. Weidlein, director of the Mellon Institute of Industrial Research, University of Pittsburgh, there has been established in the Institute a definite department of research in pure chemistry, with Dr. Leonard H. Cretcher as the head. As a senior fellow of the Institute, Dr. Cretcher (A.B., Michigan, 1912; Ph.D., Yale, 1916) has been in charge of the institution's fundamental chemical studies since 1922, and has published jointly with several assistants and other members of the Institute a number of papers on the results of their organo-chemical researches. As head of the new department, Dr. Cretcher will have supervision over all the Institute's investigations in pure chemistry and will also serve as an adviser to industrial fellows who are carrying on research on problems in synthetic organic chemistry. Dr. Weidlein says, in his announcement of the departmental plans, that Dr. Cretcher's activities will be operated as an integral part of the Institute and will be sustained by institutional subsidy. Dr. William L. Nelson (B.S., Trinity, 1920; Ph.D., Pittsburgh, 1926), who has been named as the first fellow in the department, was formerly a member of the staff of the department of chemistry of the University of Pittsburgh.

Dr. Weidlein states that while the Mellon Institute is primarily an industrial experiment station, it has always recognised the need of fundamental scientific research as a background and source of stimulus for investigation on behalf of industry. During the past five years, the Institute has been giving a constantly increasing amount of attention to the encouragement and support of research in pure chemistry, and has been progressively successful in arranging for funds to devote to the prosecution of investigations not suggested by industry, but planned within the Institute and aimed towards the study of more basic problems than those usually investigated for direct industrial purposes. In the Institute's new department of research in pure chemistry this interest and work will be nurtured and given opportunity to expand.

Non-Flam Solvents in Wax-Proofing

SOME important observations on the use of solvents in the wax-proofing process used in the shower-proofing of raincoat and other fabrics are made in a Home Office report of an investigation by Messrs. C. W. Price and H. W. Younger of a fire and explosion which occurred on September 28, 1925, owing to ignition of benzine vapour in the wax-proofing department of the Albion works of J. Mandleberg and Co., Ltd., at Salford. The investigators conclude that an explosive benzine-air mixture was formed in the vicinity of a cylinder of a drying machine. The ignition of the inflammable vapour was caused either by sparking at the commutator brushes of the drying machine motor, or by sparking occasioned by the discharge of static electricity generated in the process. It is pointed out that benzine appears to be regarded as the most suitable solvent for wax-proofing work, but that the possibility of using a less dangerous substance is worthy of consideration, and that it would seem advisable to use a non-flam solvent or a less volatile inflammable spirit in place of benzine. The use of a non-flam solvent may, of course, introduce risks to the workers through inhalation of fumes, and such risks must be guarded against by special safeguards, more particularly by the maintenance of efficient ventilation.

Books Received

SODIUM SULPHATE OF WESTERN CANADA. By L. Heber Cole. Department of Mines, Canada. Ottawa: F. A. Acland. Pp. 160. 40 cents.

VOLUMETRIC ANALYSIS. By Charles H. Hampshire. London: J. and A. Churchill. Pp. 130. 7s. 6d.

ALUMINIUM FACTS AND FIGURES. London: The British Aluminium Co., Ltd.

THE DYEING OF COTTON FABRICS. By A. J. Hall. London: Ernest Benn, Ltd. Pp. 296. 18s.

ANNUAL TABLES OF CONSTANTS AND NUMERICAL DATA, CHEMICAL, PHYSICAL AND TECHNOLOGICAL.—Sectional Volume dealing with Engineering and Metallurgy. Pp. 250. 126 Fr. Sectional Volume containing Electric, Magnetic, and Electrochemical Data. Pp. 500. 77 Fr. Cambridge: The Cambridge University Press. Paris: Gauthier-Villars et Cie.

PHOTOGRAPHIC CHEMICALS AND CHEMISTRY. By J. Southworth and T. L. J. Bentley. London: Sir Isaac Pitman and Sons, Ltd. Pp. 121. 3s. 6d.

The Calendar

Jan.		
24	University of Birmingham Chemical Society: "The Chemistry of Disinfection." R. B. Haines.	University, Birmingham.
25	Royal Photographic Society. Scientific and Technical Group. 7 p.m.	35, Russell Square, London.
26	Royal Society of Arts: "British and American Practice in Hot and Cold Working of Metals." F. W. Spencer. 8 p.m.	John Street, Adelphi, London.
26	Faraday Society. Ordinary meeting. 8 p.m.	Burlington House, Piccadilly, London.
26	Society of Chemical Industry (South Wales Section): "Quantitative Spectrographic Analysis." Capt. J. R. Green.	University College, Singleton Park, Swansea.
26	Institute of Chemistry (Belfast Section): "Hydrogen ion concentration in Plants." Professor Small. 7.30 p.m.	Queen's University, Belfast.
28	Manchester Literary and Philosophical Society (Chemical Section).	Manchester.
29	North of England Institute of Mining and Mechanical Engineers: "Steam and Electric Locomotives for Colliery Purposes." Percy F. Hope. 3 p.m.	Neville Hall, Newcastle-upon-Tyne.

Chemical Trade Returns for December

Completion of 1926 Figures

WITH the publication of the Board of Trade returns for December the record of the industrial results of the year 1926 is completed. For the month ended December 31, 1926, the imports of chemicals, drugs, dyes, and colours amounted to £1,383,052 (an increase, as compared with 1925, of £69,000); the exports amounted to £1,441,001 (a decrease of £323,833), while the re-exports amounted to £69,284 (a decrease of £32,176). For the year 1926, imports amounted to £15,445,896 (an increase of £1,059,403); exports to £21,638,544 (a decrease of £1,986,658); and re-exports to £986,408 (a decrease of £224,564). Detailed results are indicated below :—

Imports

	Quantities. Month ended December 31, 1925.	Quantities. Month ended December 31, 1926.	Value. Month ended December 31, 1925.	Value. Month ended December 31, 1926.
			£	£
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic .....tons	641	1,216	26,346	49,432
Acid Tartaric .....cwt.	3,001	2,284	14,379	11,641
Bleaching Materials „	14,406	10,707	11,721	10,912
Borax ..... „	12,410	720	14,619	792
Calcium Carbide .. „	94,200	80,023	60,353	52,468
Coal Tar Products, not elsewhere specified value	—	—	24,881	201,771
Glycerine Crude ...cwt.	1,200	—	2,987	—
Glycerine Distilled „	144	40	555	150
Red Lead and Orange Lead .....cwt.	2,737	3,671	5,543	6,551
Nickel Oxide ..... „	1,652	—	8,989	—
Potassium Nitrate (Saltpetre) .....cwt.	10,218	9,718	11,631	11,038
Other Potassium Compounds .....cwt.	328,076	476,048	85,765	124,765
Sodium Nitrate ... „	107,129	52,810	64,523	31,870
Other Sodium Compounds .....cwt.	26,014	63,246	20,708	44,618
Tartar, Cream of .. „	3,136	3,092	12,366	12,118
Zinc Oxide .....tons	986	960	36,008	34,686
All other sorts..value..	—	—	414,243	284,518
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	116,906	171,002	10,449	13,202
Bark Cinchona ....cwt.	2,305	2,282	11,407	9,400
Other Sorts .....value	—	—	158,642	127,066
DYES AND DYESTUFFS, ETC.—				
Intermediate Coal Tar Products .....cwt.	241	34	1,223	485
Alizarine ..... „	201	39	5,673	3,580
Indigo, Synthetic .. „	—	—	—	—
Other Sorts ..... „	2,958	2,883	61,684	75,667
Cutch ..... „	4,320	3,033	5,951	4,392
Other dying extracts „	4,448	4,948	13,472	15,443
Indigo, Natural.... „	96	—	2,965	—
Extracts for Tanning, cwt.	81,363	104,867	78,467	98,740
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground, including Blanc Fixe .cwt.	59,123	63,291	14,241	15,478
White Lead (dry) . „	13,323	11,472	27,653	21,504
All other sorts .... „	62,846	83,254	106,608	120,765
Total of Chemicals, Drugs, Dyes, and Colours .....value	—	—	1,314,052	1,383,052

Exports

			£	£
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric ....cwt.	2,587	2,393	2,744	2,498
Acid Tartaric .... „	864	1,206	4,799	6,313
Ammonium Chloride Muriate .....tons	383	191	11,749	4,373
Ammonium Sulphate—				
To France .....tons	494	—	6,056	—
„ Spain and Canaries tons	3,640	272	43,901	3,035
„ Italy..... „	779	292	9,807	3,407
„ Dutch East Indies tons	7,245	—	91,508	—
„ Japan..... „	4,185	1,394	50,231	16,228
„ British West India Islands (including Bahamas) and British Guiana....tons	498	—	6,569	—
„ Other Countries „	6,812	2,813	81,055	32,007
Total..... „	23,653	4,771	289,127	54,677

Re-Exports

			£	£
BLEACHING POWDER .cwt.	25,264	52,461	11,819	20,605
COAL TAR PRODUCTS—				
Anthracene .....cwt.	1,680	1,000	687	500
Benzol and Toluol galls.	546	393	58	41
Carbolic Acid ....cwt.	16,287	11,128	25,336	20,999
Naphtha .....galls.	6,757	1,779	695	279
Napthalene .....cwt.	565	140	580	151
Tar Oil, Creosote Oil, etc. .....galls.	366,643	660,623	14,267	21,781
Other Sorts .....cwt.	25,663	62,945	20,169	23,556
Total.....value	—	—	61,792	67,307
COPPER, Sulphate of .tons	1,838	924	38,791	19,744
DISINFECTANTS, INSECTICIDES, ETC. ....cwt.	30,228	29,779	76,319	74,062
GLYCERINE Crude ... „	4,279	1,789	12,243	6,010
Glycerine Distilled . „	13,225	16,965	51,488	84,415
Total..... „	17,504	18,754	63,731	90,425
POTASSIUM COMPOUNDS—				
Chromate and Bichromate .....cwt.	1,636	1,946	3,118	3,421
Nitrate (Saltpetre) „	605	1,513	1,231	2,864
All other Sorts ... „	1,574	2,067	14,826	10,081
Total..... „	3,815	5,526	19,175	16,366
SODIUM COMPOUNDS—				
Carbonate .....cwt.	351,605	289,085	109,940	91,291
Caustic ..... „	121,879	96,683	86,509	75,350
Chromate and Bichromate .....cwt.	4,258	936	6,168	1,472
Sulphate, including Salt Cake .....cwt.	278,557	80,868	32,642	12,035
All other Sorts .... „	39,971	33,644	51,227	40,262
Total..... „	796,270	501,216	286,486	220,410
ZINC OXIDE.....tons	109	41	3,645	1,921
All other Sorts .....value	—	—	258,927	265,053
Total of Chemical Manufactures and Products ...value	—	—	1,129,104	843,754
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	216,938	183,345	26,041	18,097
Opium .....lb.	110	178	227	279
All other Sorts ...value	—	—	235,199	242,539
Total..... „	—	—	261,467	260,915
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	4,480	4,675	44,556	43,900
Other Sorts..... „	5,549	7,596	6,477	8,178
Total..... „	10,029	12,271	51,033	52,078
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground, including Blanc Fixe .cwt.	10,224	9,493	3,772	3,709
White Lead (dry).. „	5,236	2,827	12,880	5,818
Paints and Colours, ground in Oil or Water .....cwt.	46,004	45,284	105,855	100,052
Paints and Enamels Prepared .....cwt.	30,325	27,774	99,545	86,920
All other Sorts .... „	53,517	44,705	101,178	87,755
Total..... „	145,306	130,083	323,230	284,254
Total of Chemicals, Drugs, Dyes and Colours .....value	—	—	1,764,834	1,441,001

Re-Exports

	Quantities. Month ending December 31,		Value. Month ending December 31,	
CHEMICAL MANUFACTURES AND PRODUCTS—	1925.	1926.	1925. £	1926. £
Acid Tartaric ....cwt.	52	73	313	485
Borax ..... ,,	20	2,023	23	3,233
Coal Tar Products.value	—	—	614	492
Glycerine Curde ...cwt.	—	—	—	2
Glycerine Distilled ,,	—	—	—	—
Potassium Nitrate (Saltpetre).....cwt.	82	50	124	77
Sodium Nitrate	2,489	152	1,481	90
Tartar, Cream of... ,,	699	777	2,640	3,081
All other Sorts ...value	—	—	20,497	10,481
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	10,709	8,773	1,748	1,169
Bark Cinchona ....cwt.	252	82	1,019	498
All other Sorts ...value	—	—	40,618	38,823
DYES AND DYESTUFFS—				
Cutch .....cwt.	1,279	676	1,823	1,006
Other Dying Extracts cwt.	113	73	989	708
Indigo, Natural.... ,,	4	19	130	459
Extracts for Tanning cwt.	12,511	436	12,451	898
PAINTERS' COLOURS AND MATERIALS.....cwt.	3,806	1,220	5,853	5,270
Total of Chemicals, Drugs, Dyes and Colours.....value	—	—	101,460	69,284

Cadmium Colours and Lake Colours

Papers Before the Oil and Colour Chemists

AT a meeting of the Oil and Colour Chemists' Association on Thursday, January 13, at the National Federation of Paint and Varnish Manufacturers, London, Mr. H. W. D. Ward read a paper on cadmium colours and their application to the paint industry.

The author disclaimed any right to call himself an oil and colour chemist and said he did not pretend to know very much about the requirements for paints. He came forward as a chemist who had paid some little attention to the manufacture of colours for the paint and allied industries and desired to bring to the notice of the oil and colour chemist the possibilities of cadmium colours for pigments in the paint trade. For years cadmium sulphide had been recognised as the premier yellow pigment for artists' colour work, and presumably the prohibitive price had been the main drawback to its general adoption by the paint industry. The recent great extension in the use of cadmium in other industries, however, had given an added stimulus to increased production which had resulted in a corresponding fall in price. It was not surprising, therefore, that a good deal of experimental work had been going on recently amongst colour manufacturers with a view to improving the existing process for the production of cadmium colours, adding to their numbers and endeavouring to find extension for their application.

Cadmium Sulphide Pigments

The increased consumption of cadmium sulphide was shown very forcibly by the fact that whereas in 1911 only one ton was produced in the United States, in 1922 the production was 60 tons. Its colour varied from the palest lemon shade to the darkest orange, and it had always been highly prized as a reliable pigment by artists, both as an oil and water colour. The production of the pure sulphide in the very pale shades was a well guarded trade secret. As a matter of fact there were several cadmium yellows in pale shades on the market to-day that were not pure sulphides but precipitated mixtures of zinc and cadmium sulphides, cadmium carbonates and sulphides, and zinc carbonates with cadmium sulphides. The darker shades were used to a large extent in the glass industry, and as a pigment for pottery decoration. Cadmium sulpho-selenide, which could be obtained in a variety of shades from orange to deep crimson, was also used for the latter purpose.

Cadmium sulphide pigments had been found to be quite fast to light and moist air exposure and they could be made in bulk at a very reasonable price. When cadmium carbonate and sulphide were suitably precipitated together, the product had a peculiarly bright orange yellow shade with a distinct pinkish tinge. A very good cheap pigment of a pale lemon shade could be obtained by suitably precipitating zinc and cadmium as sulphides. This was fast to light, but if carbonates of either metal were introduced into the pigment, the products suffered from the same bleaching fault as the cadmium sulphide carbonate. Cadmium yellows could be mixed with ultramarine to give very stable bright green pigments.

The "Cadmopones"

Mr. Ward gave a description of the preparation of cadmium lithopone ("cadmopone") and the application of the process to the production of sulpho-selenide lithopones. Cadmopone, he said, was the first new series of cadmium colours and was made by the precipitation of cadmium sulphate with barium sulphide. The pigment contained 38 per cent. CdS, which was rather higher than the percentage of ZnS in ordinary lithopone, the finished product being a clean bright lemon yellow pigment. It seemed likely that cadmopone would have a future in the paint industry, because it was quite inert to lime and alkalies, although it was decomposed by mineral acids with the solution of the cadmium sulphide present. Proceeding from the preparation of cadmium lithopone it was decided to try and apply the barium precipitation to the sulpho-selenides, and after much experiment a method was found whereby the whole series of colours could be made with a simultaneous precipitation of barium sulphate. Reviewing the stability and general character of these cadmopones, it was seriously suggested that they might be found to meet the requirements of the paint industry as suitable pigments, and the hope was expressed that members of the paint trade would take an early opportunity of giving a thorough trial to these pigments, and of reporting favourably or otherwise upon them. Incidentally it was suggested that the work on the preparation and composition of these compounds had in some small way contributed to the chemistry of selenium and sulphur, as it had been clearly shown that the two elements in combination with each other had properties which did not obtain when either of them was met with in combination with other elements alone. The natural sequence to their preparation from the chemical point of view was to proceed with the preparation and study of the dual combinations of sulphur, selenium, and tellurim with cadmium. Tellurium was still somewhat rare and expensive, but the subject was an interesting one and likely to lead to equally interesting results.

Lake Colours

Mr. A. W. C. Harrison in a paper on "The Application of Lake Dyestuffs," read at a meeting of the Manchester Section of the Association on Friday, January 14, said that in dealing with their application, they could roughly divide the lake dyestuffs into four main classes :—(*a*) Water soluble basic dyes ; (*b*) Water soluble acidic dyes ; (*c*) Slightly soluble or insoluble acidic dyes requiring a metallic precipitant ; and (*d*) Insoluble acidic dyes not requiring a metallic precipitant.

In selecting any particular group or member of a group they had to consider fastness to light and brightness ; other considerations were fastness to lime and other chemical agencies, and non-bleeding in oil or water, a final choice being governed by the price factor. There were hundreds of dyes which had some of the most important properties, but not many could stand the test of them all, and most of those that could

were the rather higher-priced products. The basic products provided a very wide range of shades of yellows, greens and blues, and some useful violets and violet to red shades. They were all fairly easily converted into pigments in a very simple plant. As this class was the only one covering the greens, blues and violets with really bright shades, quite an extensive use was made of them in this range, even though they all fell short of the desired fastness to light. Green earth was the usual base for these, and this product might be described roughly as a mixture of metallic silicates, chiefly magnesium and iron, with varying proportions of finely divided amorphous silica and a little organic matter. This base needed to be chosen and tested with extreme care, as far more depended upon the selection of a suitable green earth than on the actual make of dye.

Basic Dyes

The more widely used basic dyes had been so carefully standardised on large-scale production that little fear of being let down by their quality need be felt. His own personal experience of this class of dye was that the British Dyestuffs Corporation had surpassed anything that the continental makers had done in several important and difficult lines such as Malachite Green, Brilliant Green, Violet Blue, Methylene Blue, and Auramine. The ordinary method of using these colours was to dissolve the dyestuff in water and strain the solution through muslin to ensure that no solid particles remained, and then to mix this solution with the earth previously beaten up to a thin cream with warm water. Whilst this sounded simplicity itself, there were several important points to be watched. In the first place, unless using such a dye as Auramine, which required a rather low temperature, it was best to use very hot water and to employ as dilute a solution of dye as possible. In the second place, the fullest consideration should be given to the question of the dispersion of the dye particles, for what actually happened was that the dye in solution was moving about in almost if not quite molecular-sized particles, and if properly treated these dye particles were dispersed all over the whole surface of every particle of the green earth and were firmly occluded or adsorbed by the latter.

Acid Dyes

Many of the soluble acid dyes would be quite useful except for their distinct tendency to bleed in water, which was seen by a highly coloured filtrate from the pigment when made. When using dyes of known composition, it was very useful to have if possible an authentic standard of the true pure dye from specially pure intermediates and so be able to check off the state of the filtrate from the pigment by a check test, and also to be able to verify shade and fastness. A very small percentage of the wrong sulphonic acid or other incorrect isomer in one or other component of the dye would generally cause relatively big solubility of the finished lake. It was, of course, a costly job to get the last one or two per cent. of isomer out of the soluble intermediates where mixtures of isomers so much alike were found, as in the naphthol sulphonic acids, but a number of makers had been successful in this, and the small extra price was well justified and more than regained by the extra fastness and richness of shade and undertone obtained, the fastness to light being appreciably enhanced.

The insoluble dyes, said the author in conclusion, were sold as finely divided dry powders or as pastes, and usually required only intimate mixing and grinding with a suitable base such as barytes or blanc fixe. They were usually manufactured in an extremely finely-divided form at the dye-making stage prior to getting them down to a paste or powder. Usually about twenty minutes' dry grinding in a suitable mill would develop the full brilliancy of the shade. With this class, also, it was quite possible to spoil the strength and shade by excessive grinding, and the actual process of developing by dry grinding needed careful attention and experience. Most of the colours of this class were very fast and included such compounds as Helio Red RL, Pigment Scarlet 2G, and other types such as Hansa Yellows, Pigment Clarets, and the very valuable yellows and oranges of the pyrazolone series. All the better known of these colours were without sulphonic groups and as a rule were very insoluble in water; they usually had more than one relatively acidic radicle, generally nitro or chloro and sometimes also carboxy. These weakly acidic radicles rendered the dye non-bleeding in oil.

The Cofman-Nicoresti Chemist-Analysts

To the Editor of THE CHEMICAL AGE.

SIR,—It is two years since we heard the name of Mr. Cofman-Nicoresti. At that time he was concerned with the formation of an Institute of Chemist-Analysts. His institute presumably intended to confer the title of F.C.N.C.A. on all chemical practitioners possessing certain qualifications laid down by himself. Fortunately, for the sake of the public in general he has maintained a quiescent attitude since that time. His letter in your issue of January 8, and in that of the *Pharmaceutical Journal* of the same date, opens up the matter once again, particularly as regards these qualifications, and were he writing as a responsible member of the Pharmaceutical Society, one would have had some respect for his views. As we would suspect, he appears to be quite ignorant of affairs in Britain with regard to the relative qualifications of chemists (those who practise chemistry) and pharmacists.

In the first place, it will be news to most of us that chemical analysis was first instituted in 1841 by the establishment of the Pharmaceutical Society. Mr. Nicoresti would go so far as to say that Robert Boyle, who laid the foundations of analysis in connection with the adulteration of foods and drugs, had no knowledge of chemical analysis, nor was he entitled to possess such knowledge.

To come to the point, however, it is high time that some authoritative statement was made on this question of the relative training of the qualified chemist and the pharmacist. I have therefore compared the courses of training laid down by the Pharmaceutical Society for its chemist and druggist qualification, with that of a recognised college fulfilling the conditions for the degree of B.Sc. in Applied Chemistry, and at the same time exempting from the examination for the Associateship of the Institute of Chemistry. Here are the figures for both in hours :—

CHEMIST AND DRUGGIST.

Chemistry.	Physics.	Botany, Pharmacy, and Pharmacognosy.
500	120	540

B.Sc. IN APPLIED CHEMISTRY (A.I.C.).

Chemistry.	Physics.	Mathematics.	Engineering and Optional Subject.
3,085	390	240	396

I have sufficient confidence in the intelligence of your readers (including the pharmacists) to believe that they are capable of deciding for themselves which course confers the title to practise chemistry (analytical and otherwise). I hear Mr. Nicoresti say that the question is one of quality rather than of quantity! It may be noted in passing that mathematics has no place in the Chemist and Druggist curriculum, and that physics receives less than one-third of the B.Sc. course. Since modern chemistry is largely based upon these two sciences it is difficult to understand how the ordinary pharmacist can appreciate the recent advances in chemistry at all.

Apart from all that, the large number of pharmacists who are taking up more systematic and advanced study with a view to qualifying themselves as analysts in Foods and Drugs, is the most convincing evidence that they themselves appreciate the value of the higher qualifications.—I remain, etc.,

W. M. CUMMING,
Fellow of the "Mushroom" Institute.

Glasgow, January 14.

I.C.I. Shares Allotment

THE directors of Imperial Chemical Industries, Ltd., announce that allotment letters have been posted in respect of transfers in the order received up to December 31. Further batches of allotment letters will be posted at approximately weekly intervals.

The acceptances to date of the offer to exchange shares have been entirely satisfactory, shareholders representing over 80 per cent. of the ordinary shares in each company having agreed, and the acceptances from the other classes of shareholders being equally satisfactory.

In response to numerous requests from shareholders abroad and others who are prevented from completing the necessary formalities immediately, the directors have decided to keep the offer open for a reasonable time beyond January 15, named in the circulars to the shareholders.

Reviews

CHEMISTRY OF CELLULOSE AND WOOD. By A. W. Schorger, Ph.D. London: McGraw-Hill Publishing Co., Ltd. Pp. 596. 30s.

The author states in his preface that his aim has been to "cover completely the scientific and empirical data available on the chemistry of wood." That the work realises this formidable task may be concluded from the index of names of authors of original contributions "reported" in the text: This comprises 18 pages of double column, some 18 by 70 names, to the more prominent of which are attached from 20 to 60 page references. This represents a vast literature, and, as a criticism explicitly suggested in the preface, of conspicuously unequal values, obviously demanding drastic treatment by the competent scrutineer. This task, however, is formally declined by the author, and inferentially commended to a more ruthless wielder of the weapons of criticism.

Members of the rapidly growing craft of "cellulose" specialists will at once recognise the particular merit of the book as an exhaustive bibliography, and its main defect as discursive delineation; the inevitable result of evading a systematic plan, conforming with the logic of the science, and the *a priori* conditions of effective contribution to its development.

The scope of the treatise implicitly indicated above, is more closely defined by a brief analysis of its contents in sequence of sections.

The first four chapters deal with wood formation, structure, physical properties, proximate composition, lignin, constitution and reactions identifying constituent groups: following these (Chaps. 5-9) the chemistry of cellulose as a chemical individual is developed by way of the typical cotton cellulose, wood cellulose, hemi cellulose, derivatives and modifications, *e.g.*, oxycellulose, hydrocellulose and hydrate forms.

In the series 10-15 wood is considered in relation to its uses as such, and to industrial processes of treatment for conversion to derivative products, *e.g.*, pulping processes, destructive distillation, saccharification. The concluding chapters deal with the Bio-chemical problems of bacterial attack, and animal digestion.

The last chapter (16) describes in working detail the selected standard methods of quantitative estimation of components and ultimate constituent groups, and various diagnostic investigations of industrial raw materials.

As a treatise on a "matter of fact" basis and deliberately adopted—a work reflecting the sustained and exhaustive labours of a chemist who has earned distinction in executive and administrative capacities—it commends itself *sans* phrase to the now large community of workers in the fields connoted by its title.

In the wider perspective of science, literature and philosophy, the book rather points the criticism of our fellow chemists, frequently expressed, that the literature of "cellulose" is largely redundant through the absence of dominant *leit motif*, which is theory. This criticism is justified by a study of the history of any one of the main subjects of investigation. Thus, the chlorination of the lignone constituents of the lignocelluloses is a selective quantitative reaction and determines the elimination of the unsaturated components of the complex in fulfilment of the requirements of exact method. It conditions, therefore, a quantitative separation and estimation of cellulose. The data date from 1880. A complementary critical examination of the several alternative methods proposed shows that they depend upon complex reactions *qua* the lignone, and uncontrolled attack of the cellulose. The chemist observing the discipline of the systematic science would decide the point *a priori*; notwithstanding, there is quite an extensive literature of investigation and controversy on the subject. In this is also involved the question of the classification of the celluloses. This is effectually determined *a priori* on biochemical evidences—but the chemists have resisted and still resist the obvious—here again an extensive literature.

Again and more directly relevant to the work under consideration: The "Chemistry of Wood" or rather the wood substances proper, must be approached through the simplest of representative types—Jute fibre is a bast tissue and lignocellulose relatively simple both as a structure and a biochemical individual. If this prototype had been respected as such much time would have been saved and redundant literature avoided.

A second prototype of "annual" growth, the stone cells of the pear (fruit), was early singled out by a perspicuous investigator as a "wood" product and lignocellulose. Had this been kept in view we should have been spared much unprofitable controversy on the problem of the mode of association of lignone and cellulose in the lignocelluloses.

In respect of mere redundancy the treatment of the sectional subjects oxycellulose, hydrocellulose and alkali cellulose is anticipated by the publications of the Shirley Institute, of critically edited bibliographies (*J. Text. Inst.*, 1923, 14, 69, 73; 1922, 13, 189; 1923, 14, 264-275). Had the author adopted these as his text, he would have devoted his constructive capabilities to the superior aim of stimulating student readers to progressive research.

Again, as a more general criticism: The chemists require to be reminded that problems in this field are biochemical problems, and detachment for investigation by laboratory methods pure and simple is a violent procedure. It must not be forgotten, moreover, that while the chemist has accomplished colossal developments on the basis of the "Dalton" atom and Avogadro molecule, the modern physicist considers that he must have worked under the protection of a special providence.

In face of this experience, it may be remembered that an organised carbon compound produced by vital process may retain an impress of this origin as a physical factor of its reactivity.

These considerations applied in criticism of the author's work will show that it can only commend itself to a limited community of interested readers, and that there remains a great opportunity to produce a work which will appeal to the chemist, the biochemist, and the physiologist, and beyond these to the artist, poet, and philosopher. Whoever shall seize this opportunity will find Professor Schorger's spade work a most valuable help. C. F. CROSS.

PYROXYLIN ENAMELS AND LACQUERS. By S. P. Wilson, M.A., Ph.D. London: Constable and Co. Pp. 213. 18s.

The book opens with an interesting chapter in which is discussed the gradual development of protective coatings, culminating in the adoption of pyroxylin lacquers and enamels, and the various economic factors responsible. Then follow a number of chapters dealing with the manufacture of such substances as pyroxylin, solvents, non-solvents, plasticisers, gums and resins, pigments and dyes, used in making these products. In each case the résumé of the method of manufacture is followed by a description of those properties of the substance of special interest and importance to the varnish maker, and so presents him with a concise summary of the suitable raw materials at his disposal.

Throughout the latter portion of the book are described various pieces of chemical plant of use in this industry, and the manufacture of such products as bronzing liquids, leather dopes, and wood and lacquer enamels. The quantitative formulæ given for the manufacture of these products in three grades, viz., high, medium, and cheap, should prove interesting and useful; but it should be remembered that the American and not the Imperial gallon is used throughout this work. The last chapter discusses the testing of the products on such points as viscosity, acidity, and the film for blushing and hardness, etc. The book deals very comprehensively with enamels and lacquers made with cellulose nitrate, but one could have wished that the author had not confined himself solely to this interesting section, which he has, however, presented in a lucid form. S. G. U.

SURFACE EQUILIBRIA OF BIOLOGICAL AND ORGANIC COLLOIDS. By P. Lecomte du Noüy. New York: Chemical Catalog Co., Inc. Pp. 212. 4·50 dollars.

This is a practical volume, which can be read and used without having to refer to the literature on the subject; for instance, where the tensiometer is mentioned, a working description is given. Similarly there is a detailed description of the preparation of sodium oleate utilised for many of the experiments. The author has the courage to admit that "it is sometimes difficult to reproduce exactly the same phenomena." The book pays much attention to the colloid-chemical study of serum, plasma, egg albumin, and other proteins. It is a useful book for research workers on these subjects, and should serve as an example to writers with far greater pretensions. S. P. S.

Liquid Fuels from Coal

A Review of Recent Research

THE fourth meeting of the session of the Nottingham Section of the Society of Chemical Industry was held, with the co-operation of the Fuel Section, on Wednesday, January 12, at University College, when Dr. J. E. King (chief chemist to H.M. Fuel Research Station, Greenwich) gave an address on "The Production of Liquid Fuels from Coal." Dr. E. B. R. Prideaux was in the chair.

National Need of Oil Fuel

Dr. King stated that from the world point of view it was becoming increasingly evident that the peak of oil production from natural sources would be reached in a limited number of years; some authorities suggested five years, whilst others said 20 years. The consumption of crude oil was increasing annually. The number of oil-burning ships now being built was more than 50 per cent. of the total even in this country, such a consumption taking place to the exclusion of coal.

A recent survey had shown that we in this country could look for no national source of fuel oil. The Scottish shale beds were almost worked out, whilst the English shale beds, the chief of which extended from Norfolk to Somerset, was characterised by a high sulphur content which rendered the ultimate product of low commercial value. Our natural resources from a home point of view lay, therefore, almost entirely in coal, and the problem was: What is the best method of converting coal economically into a stable liquid form which would replace petroleum products? At the moment there were three main methods under serious consideration, with the view to solving this problem, but it was by no means certain which of these, if any, would ultimately be commercially successful.

Low Temperature Carbonisation

Dr. King outlined the three main lines of research: (1) low temperature carbonisation; (2) the hydrogenation of coal by the Bergius process; (3) the reduction of carbon monoxide for the catalytic production of liquid fuels. The primary object of low temperature carbonisation was the production of smokeless fuel; and the secondary object the production of a tar from which liquid fuel oils could be obtained. Many plants and processes had been put forward, but while many had achieved at least partial technical success, none had as yet proved successful commercially. If this process had a future it seemed likely that its applications would not be restricted to any one type of plant, since all coals were not equally suited to one particular process. At the Government Fuel Research Station, in the experimental plant, it was found that the period of maximum evolution of tar and gas coincided up to 550° C. The yields of products showed a maximum tar production at 550° for a certain class of coal. The results in general indicated that there was a critical point, which would, however, show variation with the class of coal and the type of plant used in the carbonisation process. Not only did the yields of tar vary with the temperature of carbonisation, but also the constitution of the tar. At temperatures above 550° C. there was an accelerated increase in the amounts of phenols and unsaturated oils, whilst the saturated oils showed a corresponding decrease. Again, at the lower temperatures of carbonisation, solid paraffins might be isolated from the oils which on purification had a melting point of 62° C., whereas for temperatures above 600° C. no solid paraffins could be obtained. Crude tar was not miscible with petroleum, and the only way by which the tar could be converted into fuel oils was by distillation, the available products being motor spirit, crude fuel oil, tar acids, and pitch.

If instead of burning 50,000,000 tons of household coal per annum, it was converted into smokeless fuel, this quantity of coal would yield 800,000,000 gals. of crude tar, and 150,000,000 gals. of motor spirit. In 1924 we imported 1,042,000,000 gals. of fuel and burning oils and 422,000,000 gals. of motor spirit; hence, even if the coal used in industry were also carbonised, the process would not supply the demand for motor spirit. He deplored the fact that we did not follow the continental practice in recovering as much benzol as possible from coal gas.

The Bergius Process

Dr. King described the Bergius process for the hydrogenation of coal. This process offered a much larger quantity of liquid product per ton of coal, but the commercial success at present appeared more doubtful than that of low temperature carbonisation. Briefly, the process of hydrogenation of coal consisted of the introduction of hydrogen into the coal substance and into the products of decomposition in such a manner that a high proportion formed liquid products of as fully saturated a nature as possible. The conditions necessary were a pressure of about 200 atmospheres, a temperature about 450° C., and a high gaseous concentration of hydrogen. There were several economic factors which operated against the Bergius process being a success commercially. For example, the production of hydrogen at a very cheap rate was essential if the process was to be a success commercially. Thus a ton of dry ash-free coal required about 35,000 cu. ft. of hydrogen —10 per cent. of its weight.

A discussion followed, in which Messrs. Bowen, Wilkinson, Whittaker, Bramley, Prideaux, and others took part.

Electrical Precipitation

A Discussion of the Lodge-Cottrell Method

ON Tuesday Mr. H. C. W. Henderson read a paper on "The Lodge-Cottrell Electrical Precipitation Process" before the Hull Chemical and Engineering Society. He said that in a large number of works one was faced with the insistent problem of dealing efficiently with finely-divided dust or fume which was carried in suspension by gases from some particular process. For example, in the manufacture of sulphuric acid, very great advantages resulted from thoroughly cleaning the hot burner gases before their entry into the Glover Tower; the resulting acid liquor from the tower was perfectly clear, while the trouble caused by the objectionable sludge which otherwise accumulated in the acid plant was avoided. Again, valuable metallic fumes, instead of being lost up the stack, must be recovered from the gases from lead and copper blast-furnaces, tin smelting, etc. In another field, the efficient cleaning of combustible gases, *e.g.*, iron blast-furnace gas, producer and illuminating gas, was essential for the satisfactory operation of the processes in question. When gases carrying suspended matter of any kind were subjected to a "corona" electric discharge taking place between two systems of electrodes, one of which was "earthed" while the other was insulated and charged to a high potential, the fine particles coalesced and were precipitated on the earthed electrodes.

This principle was first tried on an industrial scale at a lead works, in 1885, but because at the time the apparatus available was inadequate, the experiment was not successful. To-day, however, practically any fume could be dealt with, and about 300 plants were in successful operation in all parts of the world. One particular application of the Lodge-Cottrell process which was coming to the fore was the collection of tar fog from the gases from producers, coke-ovens, and distillation processes. Fractional precipitation could be successfully employed in such instances, and tar free from water, and of good commercial value, was obtained without difficulty. No preliminary gas cooling was required in connection with the electrical method, and there was no back-pressure caused by the installation to hinder the smooth operation of the furnaces or other process involved. The maintenance costs and power consumption of even large precipitation plants were very small.

Thermo-Electric and Resistance Pyrometry

ON Friday, January 14, at a meeting of the Chemical Engineering Groups of the Society of Chemical Industry, Mr. J. A. Hall, of the National Physical Laboratory, read a paper on "Thermo-Electric and Resistance Pyrometry in Industry." He dealt with two methods of measuring temperature in industrial practice, namely, by means of resistance thermometers and thermocouples. The subject was treated under the following headings: the temperature scale; the resistance thermometer; thermocouples; and the temperature to be measured. In the subsequent discussion, Mr. C. E. Foster (of the Foster Instrument Co.), Professor J. W. Hinchley, Mr. B. Dunglinson, Dr. H. E. Watson, Dr. W. B. Davidson, and Mr. F. H. Rogers (the chairman) took part.

British Association of Chemists

Science and Finance

It is an old saying that the man who pays the piper should have the right to call the tune, but that saying originated in days when the payer and the piper could easily be distinguished. To-day the situation is rather more complicated.

It has been widely noted by all who have experience in the employment of labour that nothing is more irritating to the operative than the knowledge that his superior possesses inferior qualifications—one "who could not do the job himself." But when the present day situation is examined it will be found that this evil is widespread.

The days of smaller and more compact enterprises had the advantage that the employer generally knew his own business from beginning to end, and friction upon that score seldom arose. A profound change is now everywhere evident in the industrial situation. In defence of the capitalist, the stock argument has been that he justifies himself in having enormously increased the aggregate of wealth. This is well and truly said, but it is not the whole truth. Without the willing co-operation of the workers, and in particular the technical workers, our last financial state would be no better than our first. This concentration upon capital, though inevitable, has also had a very serious effect. The financial magnates have, in many cases, become associated with firms of whose technical problems they have little or no knowledge, and it seems reasonable to suggest that technical enterprise cannot live by capital alone. It is true that large technical staffs are employed, but they have not for the most part any hand in executive matters. This unsatisfactory condition of things tends to improve, but the improvement is not sufficiently great, nor sufficiently speedy.

The chemist is greatly and adversely affected by this situation. There are not sufficient chemists with a seat on the board of directors, even in the industries where their opinion in executive, as much as in purely scientific, matters would be of the utmost value. Potentially we have the finest organisation of chemical and allied industries in the world, but until they are taken in hand with more regard to really scientific management from top to bottom, they will not and cannot prosper.

But we must be wary of asserting that the fault is all on one side. Over and over again it has been strongly pressed that the chemist should not confine himself to the technical net. And if a larger number of chemists—perhaps half who are trained—would give really serious attention to the business side and the business point of view, a great deal would have been done to improve the existing conditions. On the other hand, a knowledge of fundamental scientific principles would be of great use to many business men who are concerned with technical output. The fact that the business man almost always looks for the quick return is evidence that such knowledge is sadly lacking.

Looking forward, however, as it would seem, to a time of closer co-operation in industry, better times may well be hoped for. There is one form of co-operation which will do more for chemical industry than any other—a closer understanding between science and finance.

H. T. F. R.

Dyeworker's Death from Cancer

The Manchester City coroner, at an inquest held on Wednesday, January 12, on John Wilcockson (55), of Newtown, a labourer employed at the British Dyestuffs Corporation's Blackley works, recorded a verdict of "Death from cancer, with insufficient evidence as to how that was caused." Mr. W. E. Ford, works secretary, said Wilcockson had worked at Blackley for eight years. In 1920 he was gassed by naphtha fumes, and there was no other serious trouble till April, 1926, when Wilcockson was taken to the Manchester Royal Infirmary suffering from cancer. He died on January 9. Dr. Graham Bryce, Royal Infirmary, said he thought the disease had been caused by the man's employment. Dr. E. E. Hughes, who made the post-mortem examination, stated that this particular form of cancer was known to be more prevalent among dyeworkers than in other trades.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

14 (*Anhydrous Ammonia*).—An inquirer in Ireland desires to be furnished with British firms' prices of anhydrous ammonia, with free delivery in Ireland, and particulars as to how it is packed.

15 (*Machinery for Insecticides and Manures*). — "We should like to know where and when a comprehensive collection of machinery in motion, suitable for the chemical insecticide and manure manufacturing trades, can be seen? A good selection of agricultural machinery may always be seen at the Royal and Agricultural County Shows, but we have not seen or heard of one as above. Will there be such at the British Industries Fair, London and Birmingham?"

16 (*Household Soot*). — "Can you give us a few addresses of good reliable London firms supplying genuine household soot?"

17 (*Wood Meal*). — "Could you put us in touch with any users of wood meal?"

Replies

15 (*Machinery for Insecticides and Manures*). — A representative exhibition of general chemical plant was held at Westminster, London, last July; but, so far as we are aware, there have been no arrangements made for the exhibition of a comprehensive collection of machinery in motion suitable for the chemical insecticide and manure manufacturing trades. The British Industries Fair will not contain any organised exhibit of chemical machinery, but possibly in one or two of the sections, such as foodstuffs, etc., there may be an occasional machine exhibited. Our inquirer might put his suggestion before the British Chemical Plant Manufacturers' Association and the British Industries Fair Committee.

17 (*Wood Meal*). — "We presume by 'wood meal' is meant what is commonly described as 'wood flour.' The chief industries in which wood flour is used are linoleum, explosives, and synthetic resins, such as Bakelite. It is also used in the surfacing of oatmeal wallpapers and generally as a filler in the composition of various cements."

German Firm's Agent Charged with Forgery

At the London Guildhall on Thursday, January 13, before Mr. Alderman Jacobs, William Reynolds Smith, of Kingsley House, Harp Lane, E.C., attended on a summons to answer charges of forging an endorsement to a cheque, forging orders for the delivery of goods, and fraudulently converting to his own use and benefit several sums of money which he had received on behalf of the Chemische Fabrik Von Heyden, manufacturing chemists, Badebeul, Dresden. In September, 1925, it was stated, Mr. Smith was appointed agent in this country by the German company prosecuting to sell the Brolon metal caps made by them. He obtained the goods by delivery orders from the American Express Company. In September, 1926, said Mr. J. C. Maude, prosecuting, the company received a bombshell in the shape of a letter from defendant, in which he stated he had been compelled to "borrow" £500 from the cash in hand towards the running expenses of the agency. He put the whole position frankly before his employers, and they, instead of putting an end to the agency at once, allowed him to carry on. Subsequent to this, however, continued counsel, the defendant had carried on a system of "ingenious frauds" by the manipulation of delivery orders. He thus obtained goods to which he had no right, and failed to remit to Germany the money he received in payment for them. His indebtedness at last amounted to £1,186. In order to obtain possession of one item of £5 15s., he had improperly endorsed a cheque for that amount. Mr. Alderman Jacobs pointed out that endorsement of a cheque was not necessarily a forgery. On the summons being adjourned, the defendant, not being prepared with sureties, was detained in custody.

From Week to Week

AN ACCIDENTAL DEATH was the verdict returned by the Liverpool Coroner on Tuesday in the case of Joseph Edward Richards, who was fatally injured by a girder slipping at the British Enka Artificial Silk Factory.

MR. W. A. WHITING, B.A., agricultural adviser for Synthetic Ammonia and Nitrates, Ltd., of Billingham, gave a lecture on "Agricultural Chemistry" at a recent dinner of the Farmers' Club at Douglas, Isle of Man.

NORMAN CHERRY, described as a metallurgist, is being detained by the immigration authorities at New York. He lost a leg during the war, and the authorities fear that his disability may lead to his becoming a public charge.

THE INSTITUTION OF FUEL TECHNOLOGY has been registered as a company limited by guarantee, and not having a capital divided into shares. Details of the registration are given on page 100 in the list of new companies registered.

MR. A. BAILEY, speaking to the members of the Halifax Textile Society, said that at the end of the last financial year twenty million pounds worth of artificial silk had been spun in this country, and the world production was estimated at a value of £250,000,000.

THE SHAREHOLDERS of the Ship Canal Portland Cement Manufacturers, Ltd., are advised that as a result of important developments likely to favourably affect the business of the company, the directors have accepted an offer from an influential group for the unissued balance of preference shares.

PROFESSOR THOMAS GRAY, D.Sc., chairman of the Sampling and Analysis Committee of the Fuel Research Board, read a paper on "The Present Position of the Low Temperature Carbonisation of Coal" at a meeting of the Glasgow and West of Scotland branch of the Institution of Mechanical Engineers on Thursday, January 13.

A SERIOUS FIRE occurred at the dyeworks of Ruckbie and Westlands, of Selkirk, on Tuesday, January 11. The fire originated in the drying room, and destroyed valuable machinery of the latest type and a large quantity of wool. No definite estimate can yet be given, but the damage is believed to amount to several thousands of pounds.

MR. THOMAS MARTIN has been appointed secretary of the Institute of Physics. He succeeds Mr. G. S. W. Marlow, who has been acting secretary since the death of Mr. F. S. Spiers. Mr. Martin has held the posts of secretary of the British Empire Exhibition Committee of the Royal Society, and of the Optical Convention, 1926. The office of the Institute of Physics has been transferred to 1, Lowther Gardens, Exhibition Road, London, S.W.7.

THE CONTINENTAL STEEL CARTEL is said to have concluded negotiations with the metallurgical industrialists of Austria, Hungary, and Czecho-Slovakia, who will probably join the cartel in February. It is also stated that negotiations with British interests are continuing. Great Britain is believed to be standing out for a quota of 9,500,000 tons, while the cartel offers only 8,000,000 tons.

THE UNITED ALKALI CO.'S directorate has undergone the following changes: Mr. Holbrook Gaskell, who was already a director, has been appointed managing director, and the following have been appointed additional directors: Sir Alfred Mond, M.P., Sir Harry McGowan, Mr. J. G. Nicholson, and Lt.-Col. G. P. Pollitt. These additional directors will represent Imperial Chemical Industries, Ltd., in which the United Alkali Co. has been merged by exchange of shares, although it continues to have a separate existence.

THE PERKIN MEDAL was presented to Dr. J. E. Teeple on Friday, January 14, at a joint meeting of the American Sections of the Society of Chemical Industry and Société de Chimie Industrielle and the New York Sections of the American Chemical Society and the American Electrochemical Society, held in the Chemists' Club, New York. Dr. Teeple was introduced by Mr. L. V. Redman; Dr. L. M. Dennis spoke on "The Early Days of the Medallist" and Dr. C. Herty on "The Accomplishments of the Medallist." The presentation was made by Dr. C. H. Herty.

BEET SUGAR PRODUCTION is proceeding steadily in Great Britain. The directors of the Anglo-Scottish Beet Sugar Corporation have decided definitely to double the capacity of their Spalding factory at once in readiness for the 1927 crop. During the "campaign" which is now drawing to a close—the period of thirteen weeks or so when the beets go through the factory—the Cantley, Kelham, Ely, and Ipswich beet sugar factories (operated by the Anglo-Dutch group) have produced sugar from 550,000 tons of beets grown on 65,000 acres. According to a statement made recently to the Farmers' Union by Mr. E. W. James, a beet sugar factory is to be erected in Shropshire. The Ely Beet Sugar Factory, Ltd., and the Ipswich Beet Sugar Factory, Ltd., both of which are controlled by the Central Sugar Company of Amsterdam, are offering £200,000 and £150,000 of ordinary capital respectively, all in shares of £1, and these are being placed privately in London at 24s. per share, the terms of allotment being that four shares of the Ely Company shall be accepted for every three of the Ipswich concern.

RECENT WILLS INCLUDE: Mr. Frank Wilkinson, of Fernleigh, South Nutfield, Surrey, and late of Sheffield, manufacturing chemist, £44,784.

BABCOCK AND WILCOX, LTD., have subscribed £100 to the fund of £500,000 for which University College, London, is appealing to mark the centenary of its foundation.

THE WEARSIDE REFINERY CO., whose factory was burned down in September last, intends erecting its new oil and fat refinery at the South Docks, instead of at Millfield, Sunderland.

AN ACCIDENT at the Billingham works of Synthetic Ammonia and Nitrates, Ltd., resulted in the death of Mr. J. Taylor, aged 38, who was caught between two railway wagons, and subsequently died in hospital.

PROFESSOR E. L. COLLIS, the industrial chemist to the Medical School of Wales, left Cardiff last week for Harvard University, U.S.A., where he is to deliver a series of lectures on industrial hygiene.

THE SHAREHOLDERS of Nobel Industries, Ltd., Brunner, Mond and Co., Ltd., United Alkali Co., Ltd., and British Dyestuffs Corporation, Ltd., who have not yet exercised the option, and who desire to do so, are advised by an announcement to take the necessary steps without delay.

APPLICATIONS ARE INVITED for the post of Assistant Analyst in Department of the Admiralty Chemist, Portsmouth. Men £225—£20—£340; women £180—£15—£300, both plus Civil Service bonus (£105 and £93 respectively). The Secretary of the Admiralty (C.E. Branch), Whitehall, London, S.W.1. January 31.

ACCORDING to reports current on the Swansea Metal Exchange an attempt is shortly to be made to utilise the huge tips of copper and iron smelting residue in the vicinity of Swansea, Morriston, Landore, and Clydach. An examination of these tips, especially those in the Landore area, has shown that the copper slag contains about 50 per cent. iron. This is explained by the fact that the tips are all old ones, the slag having accumulated during the period when only copper was extracted from the ore. The tips are also rich in other copper by-products.

MR. C. E. WOOD, M.Sc., of the Chemistry Department, University of Birmingham, read a paper on "A Study of the Rotatory Dispersion of certain Derivatives of Hydroxy Acids" before the Birmingham and Midland Section of the Society of Chemical Industry at the University on Tuesday, January 11. The annual dinner of the Birmingham and Midland Section of the Society of Chemical Industry and the Institute of Chemistry is being held at the Queen's Hotel, Birmingham, to-day (Saturday). Those present will include the president of the Society of Chemical Industry (Mr. F. H. Carr), the president of the Institute of Chemistry (Professor Henderson), and the chairman of the Chemical Employers' Federation (Mr. Kenneth Wilson).

THE GLASGOW CORPORATION GAS DEPARTMENT have placed an order with the Woodall-Duckham Vertical Retort and Oven Construction Co. (1920), Ltd., for a new carbonising plant to be erected at the Dawsholm Gasworks. The value of the contract is approximately £245,000. The carbonising plant is to consist of 44 W.D. continuous vertical retorts, arranged in two benches each of twenty-two 103 in. retorts, and 48 intermittent vertical chambers arranged in two benches each of 24 chambers. The installation will include coal and coke handling plant, and also a complete coal treatment plant, comprising screening, washing, drying, and blending of the coals. Three waste heat boilers are to be installed with a total hourly steam-raising capacity of over 28,000 lb.

THE SOCIETY OF GLASS TECHNOLOGY held its first meeting of the year in Manchester on Tuesday and Wednesday. The general meeting was held on Tuesday in the College of Technology, under the presidency of Mr. Walter Butterworth, when there were present representatives of the organisations from different parts of the country and from the Continent. Professor W. E. S. Turner contributed a paper on "The effect of cullet on the melting of glass." Other technical papers were by Professor J. F. Ponomareff (Tomsk, Russia), by Miss Violet Dimbleby and Professor Turner, and by Professor Turner and Mr. F. Winks. On Wednesday there was a conference, at which addresses were given by Professor Turner on "The present position of the glass industry in Germany," and Professor Ponomareff on "Developments in the glass industry in Russia."

Obituary

HERR MULLER, managing director of the Vereinigten Glanzstoff-Fabriken A.-G., Elberfeld, in December. He took out some very early patents on the production of viscose.

LORD BEARSTED, founder of the Shell-Mex Oil Co., on January 17. Among his many gifts was one of £10,000 to the University of Sheffield for the encouragement of study and research in the department of metallurgy.

PROFESSOR E. H. RENNIE, of Adelaide University, aged 75. Born in Australia, he spent part of his life in England, and was at one time assistant in the chemical department of St. Mary's Hospital Medical School, London. He carried out chemical research on the natural products of Australia, the results being published in the *Journal of the Chemical Society of London*.

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The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

262,833. PHOSPHATE FERTILISER, MANUFACTURE OF. L. Adelantado, 76, Paseo de Gracia, Barcelona, Spain. Application date, June 9, 1925.

Specification No. 239,551 (see THE CHEMICAL AGE, Vol. XIII, p. 401) describes the manufacture of neutral mixed fertilisers from natural calcium phosphates. It is now found that a similar process can be applied to phosphates of iron or aluminium. These phosphates are treated with sulphates of the alkali metals or magnesium, and calcium carbonate and a small quantity of sulphuric or other acid, in the presence of water but without heating. The process can be applied to Redonda phosphate, Lahn phosphate, or South African phosphates. The product is a mixture of one or more substantially neutral water-soluble phosphates of the type K_2HPO_4, and one or more neutral phosphates insoluble in water but soluble in citric acid or ammonium citrate of the type $CaKPO_4$. The proportions employed are approximately, in molecular parts, natural phosphates containing one molecule of phosphoric anhydride 1 part, alkali metal sulphates 1 part, sulphuric or other acid 1 part. The proportion of water-soluble phosphoric acid in the product can be increased by increasing the proportion of acid and working at as low a temperature as possible. The proportion of water-insoluble phosphoric acid is increased by decreasing the speed of the reaction, allowing the temperature to rise, and using a smaller amount of acid. The free acids may be replaced by acid sulphates or acid salts which yield an acid on hydrolysis. The potash may be employed in the form of kainite, in which case the sulphate content is taken into account, and the product may be mixed with organic matter in the form of various industrial residues.

262,878. SUPERPHOSPHATE, PROCESS OF MANUFACTURING. B. Bodrero, 15, Rue de Louvre, Paris. Application date, September 22, 1925.

This fertiliser is produced from sulphur and natural calcium phosphates. The rock phosphates are washed and mixed with 3·5—10 per cent. of sulphur, and the mixture dried at 40°—50° C. Powdered organic matter may also be added, and steam is injected.

262,901. FEEDING SOLIDS INTO, OR REMOVING SOLIDS FROM VESSELS UNDER PRESSURE, PROCESS AND APPARATUS FOR. J. Y. Johnson, London. From Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, November 5, 1925.

Solids can be fed into vessels at a pressure of 100 atmospheres or more without the employment of valves and without releasing the pressure, by forcing the solids through a tube or cylinder by means of a piston or plunger which exerts a sufficient pressure to produce a tight core or stopper of a sufficient length to resist the pressure in the vessel and to effect a tight closure. The piston is reciprocated, and the supply of solid material is maintained from a hopper. The solid matter is preferably in the form of powder or small grains and of a slightly caking nature. The formation of a gas-tight stopper is assisted by adding a suitable substance or material at intervals. The latter material may be rubber, paper, or metal, and the method is applicable to soft coal, lignite, etc., which is to be introduced into a vessel containing hydrogen for conversion into liquid fuels.

262,918. FLUORINE, MANUFACTURE OF. W. J. Tennant, London. From Naamlooze Vennootschap Philips' Gloeilampenfabrieken, 6, Emmasingel, Eindhoven, Holland. Application date, November 28, 1925.

Fluorine is usually prepared by the electrolysis of liquids containing hydrofluoric acid, which necessitates the use of vessels other than glass. In the present process, fluorine is obtained by heating compounds of titanium, zirconium, or hafnium with fluorine and oxygen, in the presence of oxygen, which may be supplied as such or in the form of a peroxide which yields oxygen when heated. In an example, zirconium oxyfluoride is obtained by evaporating a solution of the fluoride almost to dryness, and then drying in vacuo at 300° C. The oxygen is dried by sulphuric acid and liquid air, and the container is then heated in an electric furnace above 200° C. to obtain fluorine.

262,958. INTERMEDIATE PRODUCTS FOR THE MANUFACTURE OF AZO-DYESTUFFS, MANUFACTURE OF. British Synthetics, Ltd., and E. B. Higgins, Aldwych House, Aldwych, London, W.C.2. Application date, December 28, 1925.

Arylides of 2 : 3-oxynaphthoic acid, particularly the anilide, are produced in this process. A mixture of 2 : 3-oxynaphthoyl-chloride and aniline gives a quantitative yield as regards the acid chloride but only about 50 per cent. as regards the amine owing to a side reaction due to liberated hydrochloric acid. In this process an aromatic amine containing no electronegative substituent is mixed with a weak alkali such as sodium bicarbonate or soda ash and sufficient water to form a paste, and 2 : 3-oxynaphthoyl-chloride is then added in solid form or in solution or suspension in benzene with very efficient mixing. Water is subsequently added in small quantities with continuous stirring, and the benzene is expelled by steam. The suspension is then rendered neutral to phenolphthalein, filtered, and washed. A yield of 97 per cent. may be obtained. In a modification, the amine is ground with slightly more than the equivalent of sodium bicarbonate and oxynaphthoyl chloride in solid condition, solution, or suspension, with continuous mixing. At this stage, half the added amine has reacted, and water is then added in small quantities until effervescence ceases, and the arylide is isolated. In another modification, the 2 : 3-oxynaphthoyl-chloride is mixed with the amine, about 50 per cent. of which reacts. The mixture is then added in small quantities to sodium bicarbonate, after which the process proceeds as before. Examples of the three methods are given.

263,018. DINITROTOLUENE, MANUFACTURE OF. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, E. H. Rodd and R. W. Everatt, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, May 12, 1926.

Dinitrotoluene, which will remain liquid below 20° C., is obtained by the nitration of commercial mononitrotoluene containing less than 45 per cent. of *m*-nitrotoluene, *e.g.*, a fraction containing 33 per cent. *m*-nitrotoluene, 35 per cent. *o*-nitrotoluene, and 32 per cent. *p*-nitrotoluene. The molten crude nitration product is crystallised, and the fractions separated by centrifuging or otherwise.

263,034. STANNIC ACID OR OXIDES OF TIN, MANUFACTURE OF. H. Harris, 62, New Broad Street, London, E.C.2. From K. B. Heberlein, 42, Broadway, New York. Application date, June 11, 1926.

This process is for treating stannic acid derived from alakli salts obtained from alkali stannate solutions by neutralising or acidifying them with acids. Such stannic acid often contains small quantities of antimony and arsenic which produces an inferior grade of tin. The stannic acid may be a by-product from the treatment of impure lead containing tin, arsenic, and antimony as described in Specification No. 213,638 (see THE CHEMICAL AGE, Vol. X, p. 495). The stannic acid is heated with a small proportion of an alkali carbonate or alkali mineral acid salt, and then ground with water and leached. Potassium carbonate is preferably employed in the case of the removal of antimony in view of the solubility of potassium oxysalts of antimony. In carrying out the process, the acid is heated in a muffle furnace to about 1,000° C., and the tin oxide is then ground with water in a Hardinge mill. The product is then leached to remove most of the arsenic and the alkali salt which was originally present in the stannic acid. To purify the product completely, the tin oxide is then filtered, mixed with a small proportion of soda ash to render the arsenic soluble, and/or potassium carbonate to render any antimony soluble in water. The mixture is then heated in a muffle

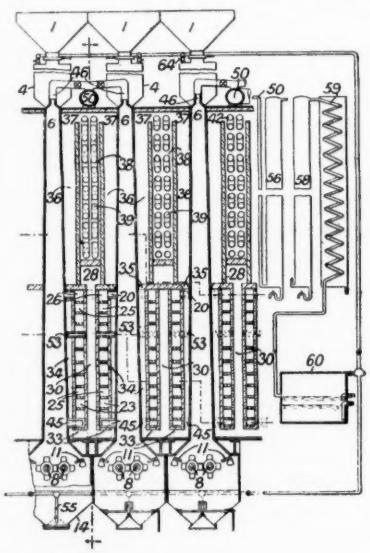
furnace to 1,000° C., and leached with water to remove the remaining impurities. The proportion of alkali carbonate employed is about 2·7 parts of sodium carbonate to each part of arsenic and 4 parts of potassium carbonate to each part of antimony. An excess of alkali carbonate would form soluble tin salts. If the stannic acid to be treated is obtained by precipitation from alkali salts by carbon dioxide, the alkali carbonate formed may be sufficient for the above operation without any addition.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—240,814 (H. Rupe), relating to manufacture of hydrocyclic-ω-amino methyl compounds, see Vol. XIII, p. 581 ; 242,620 (I.G. Farbenindustrie Akt.-Ges.), relating to manufacture of vat dyestuffs of the isodibenzanthrone series, see Vol. XIV, p. 58 ; 243,026 (Kalle and Co. Akt.-Ges.), relating to production of nitriles of benzanthrone, see Vol. XIV, p. 113 ; 244,122 (J. D. Riedel Akt.-Ges.), relating to manufacture of barbituric acid derivatives, see Vol. XIV, p. 185 ; 252,160 (Metallbank und Metallurgische Ges. Akt.-Ges.), relating to production of aluminium silicon alloys by electrothermic means, see Vol. XV, p. 15 (Metallurgical Section) ; 254,729 (Corn Products Refining Co.), relating to production of dextrose from starch-bearing materials, see Vol. XV, p. 279.

International Specifications not yet Accepted

261,362. DISTILLING CARBONACEOUS MATERIAL. L. C. Karrick, Salt Lake City, Utah, U.S.A. International Convention date, November 16, 1925.

This apparatus is for distilling coal, shale, etc., by means of superheated steam. The charge is fed from hoppers 1 to retorts 6 at a rate controlled by discharge rollers 8. Preheated gas is burnt in flues 28, and passes down through flues 30 and then up through flues 34, 36, to heat the retorts. The gas then passes down through flues 38 containing air or gas preheating tubes 39. The volatile products pass out through



261,362

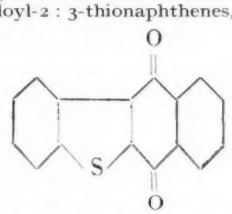
ports 46 to a main 50, air-cooled condensers 56, 58, and a water-cooled condenser 59, delivering to a separating tank 60. Steam is superheated in horizontal passages 23, 25, and admitted through ports 20 to the retort. The steam may also be admitted through ports 45 to the retort to generate water gas. The upper part of the retort is of cast iron, and the lower part of chrome iron. The high temperature part is of silica or carborundum brick. Oil, gas, resin, and an adsorbent coke are obtained.

261,377. COMPLEX ALCOHOLATES. Chemische Fabrik auf Actien (vorm. E. Schering), 170, Mullerstrasse, Berlin. International Convention date, November 12, 1925.

These alcoholates are obtained by heating together the alcoholates of different metals, or one metal alcoholate with another metal and alcohol, or a mixture of metals with alcohol in the presence of a solvent, or a metallic salt may be treated with an excess of metal alcoholate in alcoholic solution. These various methods are illustrated in the production of magnesium aluminium ethylate, sodium magnesium ethylate, and sodium aluminium ethylate. The products are condensing agents.

261,383. THIONAPHTHENE DERIVATIVES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. (Assignees of Farbwerke vorm. Meister, Lucius, und Brüning, Hoechst-on-Main, Germany.) International Convention date, November 10, 1925.

Thionaphthene-2 : 3-dicarboxylic acid anhydride is condensed with an aromatic hydrocarbon, such as benzene, or a homologue or substitution product in presence of aluminium chloride to obtain aroyl-thionaphthene carboxylic acids. These are converted by ring closure by aluminium chloride after transforming into their acid chlorides, or by sulphuric acid, into phthaloyl-2 : 3-thionaphthenes, such as



These dye wool from the vat when unsulphonated, and from an acid bath when sulphonated. Vat dyestuffs for cotton are obtained by converting the phthaloyl-2 : 3-thionaphthenes with glycerine and sulphuric acid into analogues of benzanthrone, and heating with a condensing agent such as alkali. Several examples are given.

261,385. SULPHONATING FATTY ACIDS OR OILS. H. T. Böhme Akt.-Ges., 29, Moritzstrasse, Chemnitz, Germany. International Convention date, November 11, 1925.

The sulphonation is carried out in the presence of non-aqueous organic acids, their anhydrides, or chlorides, *e.g.*, glacial acetic acid, acetic anhydride, or acetyl chloride.

261,388. PURIFYING NITROGEN-HYDROGEN MIXTURES. K. Müller, 16, Sternstrasse, Lichterfelde, Berlin. International Convention date, November 12, 1925.

A nitrogen-hydrogen mixture after preliminary purification is treated with sodium hydride at 200° C., and under pressure to complete the purification.

261,393. HYDROCARBONS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, November 12, 1925.

Gaseous olefines are heated to 300°—500° C. under pressure, in the presence of catalysts or sulphuric acid, and the polymerisation products are dehydrogenated at 550° C. under pressure in the presence of catalysts such as molybdenum, tungsten, copper, ferrosilicon, zinc oxide, molybdenum oxide, chromium oxide, thoria, cerium oxide, copper borate, active charcoal, active silica, aluminium borate. Iron and nickel lead to the formation of methane, and are avoided. The resulting gases containing hydrogen may be used for hydrogenation or reduction of organic compounds, and such compounds may be introduced into the gases which are to be dehydrogenated, so that the two processes proceed together. Examples are given of the conversion of ethylene by this process into benzene hydrocarbons, and also the treatment of a gas obtained from tar oils.

261,400. BZ-METHYL-BENZANTHRONES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. (Assignees of Farbwerke vorm. Meister, Lucius, und Brüning, Hoechst-on-Main, Germany.) International Convention date, November 13, 1925. Addition to 244,120. (See THE CHEMICAL AGE, Vol. XIV, p. 162.)

Anthrone is condensed with crotonic aldehyde in presence of sulphuric acid and glacial acetic acid, and the Bz-methyl-benzanthrone is purified.

261,406. POLYMERISED VINYL COMPOUNDS. Consortium für Elektrochemische Industrie Ges., 20, Zielstattstrasse, Munich, Germany. International Convention date, November 14, 1925.

The polymerisation of vinyl acetate is carried out in two or

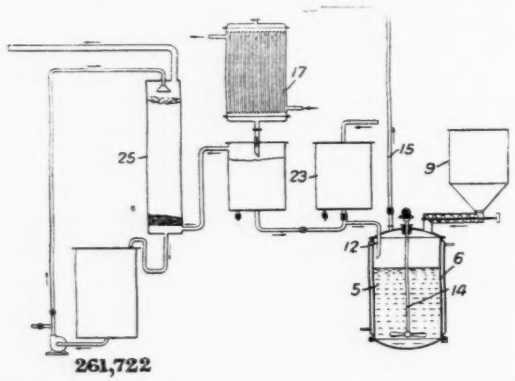
more stages to avoid a violent reaction. Part of the compound is heated under reflux to start the polymerisation and a further part of the cold reaction mixture is added while part of the heated mixture is withdrawn and the polymerisation completed in another vessel. Other liquids or gases may be present to modify the nature of the products. Examples are given of the polymerisation of vinyl acetate with 1 per cent. of benzyl peroxide, and vinyl acetate with acetic acid, acetaldehyde, paraldehyde, and potassium acetate.

261,422. ANTHRAQUINONE NITRILES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. (Assignees of Farbwerke vorm. Meister, Lucius, und Brüning, Hoechst-on-Main, Germany.) International Convention date, November 13, 1925.

These nitriles are obtained by treating halogen anthraquinones with cuprous cyanide in the presence of an aliphatic or aliphatic-aromatic nitrile. The reaction is effected in a closed vessel or not, according as the latter nitrile is of low or high boiling point. The first products are compounds containing the anthraquinone nitrile, copper, and the aliphatic nitrile. These products are treated with nitric acid and steam distilled, the anthraquinone nitrile remaining. Examples are given of the production of anthraquinone-1-nitrile, anthraquinone-1 : 2-, 1 : 3-, 1 : 4-, and 1 : 5-dinitriles, 1 : 4 : 5-tricyano-8-chloranthraquinone, 1 : 4 : 5 : 8- and 1 : 2 : 3 : 4-anthraquinone-tetranitrile, and others.

261,722. CYANIDES. California Cyanide Co., Inc., 342, Madison Avenue, New York. (Assignees of F. J. Metzger, 342, Madison Avenue, New York.) International Convention date, November 23, 1925.

Insecticides are made by treating hydrocyanic acid with the carbide of an alkali or alkaline earth metal, preferably in the



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presence of 0·5 to 5 per cent. of water, which acts as a catalyst. The product is a cyanide of the form $Ca(CN)_2 . x HCN$. Ground calcium carbide is supplied from a hopper 9 and liquid hydrocyanic acid from a tank 23 to a mixer 5 having a stirrer 14 and a heating jacket 6. Acetylene is evolved, and passes off through a pipe 15 to a cooling tower 17 and then to a packed tower 24, supplied with caustic soda solution, to recover any hydrocyanic acid, which is returned to the vessel 5. The product is a yellow powder soluble in water, which yields hydrocyanic acid on exposure to air.

LATEST NOTIFICATIONS.

264,124. Manufacture of glycols. Carbide and Carbon Chemicals Corporation. January 7, 1926.

264,143.—Manufacture of hydroxy acid esters. Canadian Electro Products Co., Ltd. January 11, 1926.

Specifications Accepted, with Date of Application

244,461. Agglomerated adsorbent carbon, Manufacture of. Soc. de Recherches et d'Exploitations Petroliferes. December 9, 1924.

245,131. Sodium-aluminium boro-silicate glass, Process for the production of. Sibor Soc. Anon. Verreries de Romont. December 21, 1924.

251,268. Ferro-silicon masses containing valuable metals, Process for the utilisation of. T. Goldschmidt. Akt.-Ges. April 23, 1925.

253,124. Catalytic heating apparatus. Soc. Lyonnaise des Rechauds Catalytiques (Soc. Anon.). June 8, 1925.

253,520. Alkali monoxides, Manufacture of. Roessler and Hasslacher Chemical Co. June 8, 1925.

255,043–7. Concentrated acetic acid from dilute aqueous or crude dilute pyroligneous acid, Process for the preparation of. H. Suida. July 13, 1925.

260,212. Basic copper sulphate suitable for the manufacture of ammoniacal copper oxide cellulose solutions, Process for the production of. J. P. Bemberg. Akt.-Ges. October 20, 1925.

263,502. Oxygen-containing and other organic compounds, Production of. H. Dreyfus. July 1, 1925.

263,517. Accelerators for rubber vulcanisation. E. C. R. Marks. (*E. I. Du Pont de Nemours and Co.*) September 17, 1925.

263,552. Poly-nitro-amines, Process for the manufacture of. W. H. Bentley and W. Blyth and Co., Ltd. October 2, 1925.

263,576. Phosphatic materials, Treatment of. B. P. Hill and Blaydon Manure and Alkali Co. (1877), Ltd. October 26, 1925.

263,579. Dyeing acetyl cellulose. O. Y. Imray. (*Soc. of Chemical Industry in Basle.*) October 28, 1925.

263,623. Sodium fluoride from silico hydrofluoric acid, Process for the manufacture of. W. Siegel. January 1, 1926.

263,642. Precious metals from the slimes of copper refineries. Process for the extraction of. N. Baraboshkin and Trust Uralkupfer. January 26, 1926.

263,644. Continuous production of lead oxides in the dry state, Apparatus for. G. Shimadzu. January 27, 1926.

263,659. Destructive distillation of bones and the like, Apparatus for. C. H. Shearman. March 17, 1926.

263,670. Colloidal and the like materials and the manufacture thereof. W. H. Bentley, W. M. Coates, and J. Riley and Sons, Ltd. June 7, 1926.

263,686. Low-temperature carbonisation of coal, lignite, shale, peat, or the like. Sir H. Whitehead and H. P. Hird. July 8, 1926.

Applications for Patents

Aluminium Co. of America. Production of sodium aluminate. 805. January 11. (United States, January 21, 1926.)

Auchinachie, P. P. J., and Blackburn, H. W. Manufacture of ammonia. 1,211. January 14.

British Dyestuffs Corporation, Ltd. Manufacture of artificial textile fibres. 966. January 12.

Busch, A. Process for preparing water-soluble silicic acid albumen compounds. 863. January 11.

Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Reduction of aromatic nitro compounds. 1,082. January 13. (April 21, 1926.)

Chemische Fabrik auf Actien, vorm E. Schering. Manufacture of chloriodo compounds of alpha-aminopyridine, etc. 979. January 12. (Germany, January 15, 1926.)

Debo, A., and Internationale Bergin-Compagnie voor Olie-en Kolenchemie. Hydrogenation of hydrocarbon compounds. 731. January 10.

Drescher, H. A. E., Harris, J. E. G., Scottish Dyes, Ltd., and Wylam, B. Dyes, etc. 746. January 10.

Fujisawa, T., and Hughes, G. Manufacture of active carbon. 1,068. January 13.

Holmes, J., Jardine, J. L., and Kingcome, H. A. Apparatus for recovery of soda ash. 814. January 11.

Hüttenwerke Tempelhof A. Meyer, Meyer, L., and Meyer, M. Manufacture of copper sulphate. 986. January 12. (Germany, January 13, 1926.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of sulphuretted hydrogen, etc. 700. January 10.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of unsaturated hydrocarbons. 701. January 10.

I. G. Farbenindustrie Akt.-Ges. Manufacture of grey to black dyestuffs. 960. January 12. (Germany, January 12, 1926.)

I. G. Farbenindustrie Akt-Ges. Manufacture of alkyl-pyrazolanthrones. 961. January 12. (Germany, January 13, 1926.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of phosphorus oxides. 1,164. January 14. (Germany, January 15, 1926.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of carbazole quinones. 1,292. January 15. (Germany, January 15, 1926.)

Lessing, R. Separation of powdered, etc., coal, etc. 856. January 11.

Marks, E. C. R., and Selden Co. Catalytic oxidation. 752. January 10.

Newport Co. 3. 4 Diamino benzoyl *o*-benzoic acids. 708. January 10. (United States, September 13, 1926.)

Norsk Hydro-Elektrisk Kvælstofaktieselskab and Woosnam, A. Production of hydrogen, etc. 732. January 10.

Schaub, J. J. Manufacture, etc., of nitro-cellulose. 1,197, 1,198. January 14.

Soc. d'Etudes Minières et Industrielles. Manufacture of ammonia. 1,173. January 14. (France, July 6, 1926.)

Synthetic Ammonia and Nitrates, Ltd. Centrifugal apparatus. 1,227. January 15.

Thomas, W. Manufacture of ammonia. 1,211. January 14.

Verein für Chemische Industrie Akt.-Ges. and Walter, H. Process for producing products of unsaturated hydrocarbons. 851. January 11.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £34 per ton; powder, £36 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 6⅝d. per lb. Crude 60's, 1s. 9½d. to 2s. per gall.

ACID CRESYLIC 99/100.—2s. 4d. per gall. Steady. 97/99.—2s. to 2s. 1d. per gall. Pale, 95%, 1s. 10d. to 2s. per gall. Dark, 1s. 9d. to 2s. per gall.

ANTHRACENE.—A quality, 2½d. to 3d. per unit. 40%, 3d. per unit.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.

BENZOLE.—Crude 65's, 1s. 3½d. to 1s. 4½d. per gall., ex works in tank wagons. Standard Motor, 1s. 6d. to 2s. 4½d. per gall., ex works in tank wagons. Pure, 2s. 2½d. to 2s. 5½d. per gall., ex works in tank wagons. Steady.

TOLUOLE.—90%, 2s. to 2s. 6d. per gall. Firm. Pure, 2s. 3d. to 2s. 8d. per gall.

XYLOL.—2s. 3d. to 2s. 8d. per gall. Pure, 4s. per gall.

CREOSOTE.—Cresylic, 20/24%, 10½d. per gall. Standard specification, 6d. to 9½d.; middle oil, 7½d. to 8d. per gall. Heavy, 8d. to 9½d. per gall.

NAPHTHA.—Crude, 10d. to 1s. 1d. per gall. according to quality. Solvent 90/160, 2s. to 2s. 1d. per gall. Solvent 95/160, about 2s. per gall. Solvent 90/190, 1s. 3½d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £8 per ton. Whizzed or hot pressed, £8 10s. per ton.

NAPHTHALENE.—Crystals, £11 10s. to £12 10s. per ton. Quiet, Flaked, £12 10s. to £13 per ton, according to districts.

PITCH.—Medium soft, 117s. 6d. to 130s. per ton, according to district, Prices nominal, and more inquiry.

PYRIDINE.—90/140, 9s. 6d. to 17s. per gall. Nominal. 90/180, 7s. 6d. per gall. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—8s. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—1s. 6d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—9½d. per lb. naked at works.

ANILINE SALTS.—9½d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—4d. to 4½d. per lb. Quiet.

m-CRESOL 98/100%.—2s. 8¾d. per lb. Quiet.

p-CRESOL 32/34° C.—2s. 8¾d. per lb. Quiet.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—2s. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—11d. to 1s. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.

B-NAPHTHYLAMINE.—3s. per lb. d/d.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 9d. per lb. d/d.

NITROBENZENE.—7d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb. d/d.

R. SALT.—2s. 4d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—9d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 per ton. Scarce. Grey, £17 5s. per ton. Liquor, 9d. per gall. 32° Tw.

CHARCOAL.—£8 5s. to £10 per ton and upwards, according to grade and locality. Very scarce and in fair demand.

IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall. 24° Tw.

RED LIQUOR.—10d. to 11d. per gall. 16° Tw.

WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 10d. to 4s. per gall., 60% O.P. Solvent, 4s. per gall., 40% O.P. Both scarce and in fair demand.

WOOD TAR.—£4 to £5 per ton and upwards, according to grade.

BROWN SUGAR OF LEAD.—£41 to £42 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5½d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—2s. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—5s. 3d. per lb.

ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb. Firm.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.

ACID, BORIC B.P.—Crystal, £40 per ton; powder, £44 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 3½d. per lb., less 5%. Weak market.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P.—1s. 4d. to 1s. 5d. per lb. Firm and good inquiry. Technical.—11¾d. to 1s. per lb. Good inquiry.

ACID, TANNIC B.P.—2s. 9d. to 2s. 11d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%.

AMIDOL.—9s. 6d. per lb., d/d.

ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—11s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated: lump, 1s. per lb.; powder, 1s. 3d. per lb.

ASPIRIN.—2s. 4d. per lb. Good demand.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—8s. 9d. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 3d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 3d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 6d. to 12s. 6d. per lb., all above bismuth salts, according to quantity.

BISMUTH NITRATE.—6s. 9d. per lb.

BISMUTH OXIDE.—13s. 9d. per lb.

BISMUTH SUBCHLORIDE.—11s. 9d. per lb.

BISMUTH SUBGALLATE.—9s. 9d. per lb.

BORAX B.P.—Crystal, £24 per ton; powder, £25 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 9d. to 2s. per lb.; sodium, 2s. to 2s. 3d. per lb.; ammonium, 2s. 2d. to 2s. 4d. per lb., all spot.

CALCIUM LACTATE.—1s. 4d. to 1s. 6d.

CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHER METH.—1s. 1d. to 1s. 1½d. per lb., according to sp. gr. and quantity. Ether purif. (Aether B.P., 1914), 2s. 3d. to 2s. 4d., according to quantity.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—6s. 6d. to 7s. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.

IRON PERCHLORIDE.—22s. per cwt., 112 lb. lots.

MAGNESIUM CARBONATE.—Light Commercial, £33 per ton net.

MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

MENTHOL.—A.B.R. recrystallised B.P., 18s. 9d. per lb. net; Synthetic, 10s. 6d. to 12s. per lb., according to quantity; Liquid (95%), 12s. per lb.; Detached Cryst., 15s. per lb.

MERCURIALS.—Red Oxide, 6s. 5d. to 6s. 7d. per lb., levig., 6s. to 6s. 1d. per lb.; Corrosive Sublimate, Lump, 4s. 3d. per lb., Powder, 4s. 2d. to 4s. 3d. per lb.; White Precipitate, 5s. 1d. per lb., Powder, 4s. 11d. to 5s. 1d. per lb., Extra Fine, 5s. 1d. to 5s. 2d. per lb.; Calomel, 5s. 3d. to 5s. 5d. per lb.; Yellow Oxide, 5s. 10d. to 5s. 11d. per lb.; Persulph., B.P.C., 5s. 1d. to 5s. 2d. per lb.; Sulph. nig., 4s. 10d. to 4s. 11d. per lb.

METHYL SALICYLATE.—1s. 9d. per lb.

METHYL SULPHONAL.—15s. 6d. per lb.

METOL.—11s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s 4d. per lb.

PHENACETIN.—3s. 9d. to 4s. per lb.

PHENAZONE.—5s. 9d. to 6s. per lb.

PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—83s. per cwt., less 2½% for ton lots. Dearer.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 5d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.

QUININE SULPHATE.—2s. per oz., 1s. 8d. to 1s. 9d. per oz. in 100 oz. tins.

RESORCIN.—4s. to 4s. 3d. per lb., spot.

SACCHARIN.—55s. per lb. Quiet.

SALOL.—3s. to 3s. 3d. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb. B.P.C., 1923—2s. to 2s. 2d. per lb. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb. carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—80s. to 85s per cwt., according to quantity.

SODIUM SALICYLATE.—Powder, 1s. 10d. to 1s. 11d. per lb. Crystal, 1s. 11d. to 2s. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—10s. 6d. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 2d. per lb.

THYMOL.—Puriss., 10s. 9d. to 11s. 6d. per lb., according to quantity; natural, 17s. 6d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. 3d. per lb.

AUBEPINE (EX ANETHOL).—10s. 6d. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 6d. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 3d. per lb.

CINNAMIC ALDEHYDE NATURAL.—18s. per lb.

COUMARIN.—11s. per lb.

CITRONELLOL.—15s. per lb.

CITRAL.—9s. 6d. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—9s. 6d. per lb.

GERANIOL (PALMAROSA).—19s. per lb.

GERANIOL.—6s. 6d. to 10s. 6d. per lb.

HELIOTROPINE.—4s. 10d. per lb.

ISO EUGENOL.—13s. 6d. per lb.

LINALOL.—Ex Shui Oil, 12s. per lb. Ex Bois de Rose, 16s. per lb.

LINALYL ACETATE.—Ex Shui Oil, 14s. 6d. per lb. Ex Bois de Rose 18s. per lb.

METHYL ANTHRANILATE.—9s. per lb.

METHYL BENZOATE.—4s. 6d. per lb.

MUSK KETONE.—36s. per lb.

MUSK XYLOL.—8s. 6d. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—11s. per lb.

RHODINOL.—28s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—19s. per lb.

Essential Oils

ALMOND OIL.—11s. 6d. per lb.

ANISE OIL.—3s. 3d. per lb.

BERGAMOT OIL.—31s. 6d. per lb.

BOURBON GERANIUM OIL.—12s. per lb.

CAMPHOR OIL.—63s. 6d. per cwt.

CANANGA OIL, JAVA.—20s. per lb.

CINNAMON OIL, LEAF.—5½d. per oz.

CASSIA OIL, 80/85%.—8s. 6d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 4d. per lb. Ceylon, pure, 1s. 11d. per lb.

CLOVE OIL.—6s. 3d. per lb.

EUCALYPTUS OIL, 70/75%.—2s. per lb.

LAVENDER OIL.—Mont Blanc 38/40%, Esters, 19s. per lb.

LEMON OIL.—9s. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—9s. 9d. per lb.

OTTO OF ROSE OIL.—Bulgarian, 70s. per oz. Anatolian, 30s. per oz.

PALMA ROSA OIL.—9s. 6d. per lb.

PEPPERMINT OIL.—Wayne County, 24s. 6d. per lb. Japanese, 9s. 6d. per lb.

PETITGRAIN OIL.—8s. 3d. per lb.

SANDALWOOD OIL.—Mysore, 26s per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, January 19, 1927.

BUSINESS has been decidedly brisker during the past week, although individual transactions are still on the small side. Prices are very firm and the general tendency is upwards. There is a fair export inquiry, but many of the limits which are coming from overseas are too low.

General Chemicals

ACETONE is lower in price at about £6 per ton.

ACID ACETIC is in good demand, prices unchanged.

ACID CITRIC is lifeless, the nominal market price being 1s. 2¼d. per lb.

ACID FORMIC is in fair demand and price is very firm.

ACID LACTIC is in steady demand at about £43 per ton, for 50% by weight.

ACID OXALIC.—The advance in price is fully maintained and there seems to be nothing in second hands. Price is firm at 4d. per lb.

ACID TARTARIC is quiet, price nominally 11½d. per lb.

ALUMINA SULPHATE is in good demand, price unchanged at £6 5s. per ton, for 17-18%.

AMMONIUM CHLORIDE is rather firmer at £19 per ton.

BARIUM CHLORIDE is very quiet, price £9 10s. per ton.

COPPER SULPHATE is in fair inquiry at £24 to £24 10s. per ton.

CREAM OF TARTAR is firm and scarce at £81 to £82 per ton.

EPSOM SALTS.—Unchanged at £5 10s. per ton.

FORMALDEHYDE is in fair demand and is quoted at £41 to £42 per ton.

LEAD ACETATE is very firm, white quoted at £45 10s., and brown at £43 per ton.

METHYL ACETONE is firm at £58 to £60 per ton, for high grade material.

METHYL ALCOHOL.—Unchanged at £46 per ton.

POTASSIUM CHLORATE is steady at 3½d. per lb.

POTASSIUM PERMANGANATE is quiet at about 7½d. per lb., for B.P. grade.

POTASSIUM PRUSSIATE is firm and scarce for early months of this year. Price 7½d. per lb.

SODA ACETATE is quietly steady at £20 to £20 10s. per ton.

SODA BICHROMATE is in good demand; makers' price is unchanged.

SODA HYPOSULPHITE remains a steady market; price seems likely to go higher.

SODA NITRITE.—Unchanged at £19 10s. to £20 per ton.

SODA PRUSSIATE is very firm at 4⅜d. per lb. to 4½d. per lb.

SODA SULPHIDE.—Continental makers are sold out for the next few months, and home trade prices are higher.

ZINC SULPHATE.—Unchanged.

Coal Tar Products

The prices of coal tar products generally have an easier tendency, owing to the increase in production, consequent on resumption of work after the strike.

90's BENZOL is quoted at 1s. 10½d. per gallon, on rails, while the motor quality is worth about 1s. 9½d. per gallon.

PURE BENZOL is quoted at 3s. per gallon, on rails.

CREOSOTE OIL is weaker, and is worth about 7d. to 7½d. per gallon, on rails at works in the country, while the price in London is about 8½d. to 8¾d. per gallon, at works.

CRESYLIC ACID is unchanged, and is quoted at 2s. per gallon, on rails for the pale quality 97/99%, while the dark quality 95/97% is worth about 1s. 11d. per gallon.

SOLVENT NAPHTHA is unchanged, at 1s. 7d. to 1s. 8d. per gallon, on rails.

HEAVY NAPHTHA is quoted at 1s. 6d. to 1s. 7d. per gallon, on rails.

NAPHTHALENES are unchanged, the 76/78 quality being quoted at about £8 to £9 per ton, while the 74/76 quality is worth about £8 to £8 5s. per ton, at makers' works.

PITCH is unchanged, and little business has been reported. To-day's price is 120s. to 130s., f.o.b. U.K. port.

Latest Oil Prices

LONDON.—LINSEED OIL quieter at 2s. 6d. to 5s. decline. Spot, £31 15s., ex mill; January, £30 5s.; January, April and May-August, £30 7s. 6d.; September-December, £30 17s. 6d. RAPE OIL slow. Crude extracted, £44 10s., ex wharf; technical refined, £46 10s. COTTON OIL firm and occasionally 10s. higher. Refined common edible, £38; Egyptian crude, £33 10s.; deodorised, £40. TURPENTINE quiet and 3d. to 6d. per cwt. lower. American spot, 51s.; and February to December, 52s. 6d.

HULL.—January 19.—Naked, spot and January, £31 2s. 6d.; February-April, £31; May-August, £30 17s. 6d. COTTON OIL.—Naked Bombay crude, £32 5s.; Egyptian crude, £33 10s.; edible refined, £37; technical, £36; deodorised, £39. PALM KERNEL OIL.—Crushed, naked, 5½%, £39 10s. GROUNDNUT OIL.—Crushed-extracted, £42; deodorised, £46. SOYA OIL.—Crushed and extracted, £34; deodorised, £37 10s. RAPE OIL.—Crude-extracted, £44; refined, £46 per ton, net cash terms, ex mill.

Nitrogen Products

EXPORT.—The market for export still continues somewhat quiet; there has been a little demand for Spain and the Far East. Quotations remain unchanged at £11 5s. to £11 7s. 6d. per ton, f.o.b. U.K. port in single bags.

HOME.—The demand for the home trade still continues quite good for the time of year. The price remains as last quoted.

NITRATE OF SODA.—An arrangement has been made with the Chilean producers whereby they undertake to give a protective clause to buyers who purchase for January/May 1927 shipment. The producers will re-purchase any quantities unsold at June 30 up to 75 per cent. of each importer's purchases under the scheme; 200,000 tons are now offered on this basis, and it is stated that this quantity is likely to be taken up at once. Freights from Chile at the moment are very firm, and there is not much tonnage available; in fact, the earliest position indicated for loading is March.

Calcium Cyanamide

LATE buying of nitrogenous fertilisers being apparently the rule this year, merchants are showing some concern as to the prospects of prompt delivery during the spring months. While no shortage of supplies is anticipated the possibility of congestion on railways late this season has to be taken into account, which probably accounts for the interest in cyanamide for prompt delivery. Prices are unchanged at £9 12s. per ton delivered in 4 ton lots, carriage paid to any railway station in Great Britain.

B.D.H. Price List

THE latest edition of the catalogue of B.D.H. fine chemicals, January, 1927, issued by the British Drug Houses, Ltd., is perceptibly stouter than the one last issued, and shows the growing range of fine chemicals now available in this country. In the catalogue organic and inorganic chemicals for research and analysis fill 76 pages, and there are also lists of analytical reagents "A. R."; of volumetric solutions, and chemicals for special purposes (water, urine, blood, gas, and other analyses); organic and inorganic chemicals for use as standards. The section devoted to hydrogen-ion examinations includes indicators; buffer mixtures, solutions, and chemicals; the B.D.H. capillator, comparator, and soil testing outfit, etc. The company also supplies microscope stains for bacteriology, etc., and staining solutions; and other requisites for microscope work. The catalogue ends with lists of aniline dyes and minerals.

New Year Calendars, Handbooks, &c.

AN extremely neat and convenient framed desk calendar for 1927 is being issued by the Premier Filterpress Co., Ltd., of Finsbury Pavement House, London, to their numerous customers and business friends. A separate card is provided for each month, and standing in its frame on the desk the date is seen at a glance, while the user has a constant reminder of the firm's products—filter presses, pumps, diaphragm pumps, filtercloth, etc. A dainty miniature pocket diary is also issued by the firm.

Aluminium Facts and Figures, published by the British Aluminium Co., Ltd., of Adelaide House, King William Street, London, is an extremely useful compendium of data concerning the metal in question. Among other things, it deals with physical properties and constants; wire and sheet gauges; conversion factors; data on aluminium ingots, billets, round rods, bars and strips, foil, and wire; B.E.S.A. standards of stranded aluminium conductors and of alloys; sizes and weights of aluminium sheets, circles and tubes; safe internal pressures for aluminium tubes; collector bows and sections. There are also interesting notes on oxy-acetylene welding of aluminium sheet, press work, painting, etc.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, January 19, 1927.

INQUIRY still remains good and there has been an appreciable amount of business put through during the past week. Prices show little or no change since our last report.

Industrial Chemicals

ACID ACETIC.—98/100%, £55 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 to £38 per ton; 80% technical, £37 to £38 per ton, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated or small flakes, £34 per ton; powder, £36 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC ICE CRYSTALS.—Inquiry still slow and price unchanged at about 6¾d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC B.P. CRYSTALS.—In little demand, spot material quoted 1s. 3d. per lb., less 5%, ex store. On offer from the Continent at about 1s. 2¾d. per lb., less 5%, ex wharf.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 9d. per carboy. Dearsenicated quality, 6s. 3d. per carboy, ex works.

ACID NITRIC, 80°.—Usual steady demand and price unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—In moderate demand and price unchanged at about 3¾d. per lb., ex store, spot delivery. Price, 3½d. per lb., c.i.f. U.K. ports, prompt shipment from the Continent.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Unchanged at about 11½d. per lb., less 5%, ex store, spot delivery. Offered for early shipment at 11⅛d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18% IRON FREE.—Spot material on offer at about £6 per ton, ex store. Quoted £5 8s. 6d. per ton, c.i.f. U.K. ports, prompt shipment from the Continent.

ALUM, POTASH.—Lump quality quoted £8 10s. per ton, c.i.f. U.K. ports. Crystal powder at 5s. per ton less. Lump, on spot quoted £9 5s. per ton, ex store. Crystal powder, £8 15s. per ton, ex store.

AMMONIA ANHYDROUS.—Now quoted 10d. per lb., ex store; containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powder, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £23 10s. to £24 10s. per ton, ex station. Continental make on offer at about £21 per ton, c.i.f. U.K. ports. Fine white crystals of Continental manufacture quoted £18 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—In moderate demand. Offered for early delivery from mines at about £19 15s. per ton, ex wharf. Spot material quoted £20 per ton, ex store.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals now quoted £8 2s. 6d. per ton, c.i.f. U.K. ports, packed in bags. Casks, 7s. 6d. per ton extra. Offered for spot delivery at £9 15s. per ton, ex store.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers £8 per ton, ex station, minimum 4 ton lots. Spot material, 10s. per ton extra. Continental now quoted £7 10s. per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £19 10s. per ton; crystals, £20 per ton; powder, £21 per ton, carriage paid U.K. ports.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or at £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—English material quoted £23 per ton, f.o.b. U.K. ports. Continental on offer at £21 10s. per ton, c.i.f.

FORMALDEHYDE, 40%.—On offer for prompt shipment at £38 5s. per ton, c.i.f. U.K. ports. Spot material unchanged at £40 per ton, ex store.

GLAUBER SALTS.—English material quoted £4 per ton, ex store or station. Continental now offered at about £2 17s. 6d. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material now on offer at about £35 10s. per ton, ex store.

LEAD, WHITE.—Quoted £36 per ton, ex store.

LEAD ACETATE.—White crystals quoted £44 per ton, c.i.f. U.K. ports; brown, about £40 5s. per ton, c.i.f. U.K. ports. White crystals on offer at about £45 per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH, CAUSTIC, 88/92%.—Solid quality, £27 5s. per ton, minimum 15 ton lots, c.i.f. U.K. ports. Smaller quantities, 15s. per ton extra. Liquid quality, 50° Be, £14 per ton, c.i.f. U.K. ports, minimum 15 ton lots. Smaller quantities, 7s. 6d. per ton extra.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE.—96/98% quoted £25 5s. per ton, ex wharf, early delivery. Spot material on offer at £26 10s. per ton, ex store; 90/94% quality quoted £22 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 98/100%.—Powdered quality offered from the Continent at £24 10s. per ton, c.i.f. U.K. ports. Crystals, £2 per ton extra.

POTASSIUM NITRATE (SALTPETRE).—Offered from the Continent at £21 15s. per ton, c.i.f. U.K. ports. Spot material now quoted £23 35s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6¾d. per lb., ex store, spot delivery. On offer for early shipment at 6½d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—In good demand, and price unchanged at about 7⅞d. per lb., ex store. Offered from the Continent at 7½d. per lb., ex wharf.

SODA CAUSTIC.—Powder, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station, minimum four-ton lots on contract. Spot material 10s. per ton extra.

SODIUM ACETATE.—English material quoted £22 10s. per ton, ex store. Continental on offer at about £19 per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3½d. per lb., delivered buyer's works.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powder or pea quality, £1 7s. 6d. per ton more; alkali, 59%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture now quoted £9 2s. 6d. per ton, ex station, minimum four-ton lots. Pea crystals, photographic quality, £14 10s. per ton, ex store, spot delivery. Continental commercial quality quoted £8 per ton, c.i.f. U.K. ports, or £8 10s. per ton, ex store.

SODIUM NITRATE.—Ordinary quality about £12 12s. 6d. per ton, ex store. Refined quality, 5s. per ton extra.

SODIUM NITRITE, 100%.—£21 5s. per ton, ex store, spot delivery.

SODIUM PRUSSIATE (YELLOW).—Quoted 4¾d. per lb., ex store, spot delivery in moderate demand. Offered from the Continent at about 4¼d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 7s. 6d. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE.—60/65%, solid, £12 10s, per ton; broken, £13 10s. per ton; flake, £14 10s. per ton; crystals, 31/34%, £8 10s. per ton, and £9 per ton, according to quality, delivered buyer's works, minimum four-ton lots on contract. Price for spot, 5s. per ton extra for solid, 2s. 6d. per ton extra for crystals 60/62%, solid quality offered from Continent at about £9 7s. 6d. per ton, c.i.f. U.K. ports; broken, 15s. per ton extra.

SULPHUR.—Sicilian suppliers have again advanced their prices. Nominal price, ex store, is now as follows: flowers, £12 10s. per ton; roll, £11 10s. per ton; rock, £11 10s. per ton; floristella, £11 per ton; ground American, £9 15s. per ton.

ZINC CHLORIDE.—British material 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material on offer at about £10 10s. per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

BETA NAPHTHOL.—11d. to 1s. per lb. Some inquiries.

ALPHA NAPHTHYLAMINE.—1s. 3d. per lb. Some inquiries.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb., per 100%. Some inquiries.

NAPHTHIONIC ACID.—1s. 4d. per lb., per 100%. Some inquiries.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, January 20, 1927.

Interest in chemicals on the Manchester market during the week has continued on the slightly better scale mentioned in my last report. The cotton textile industry seems to have improved, but whether the improvement will be long or short lived remains to be seen. In any event, it is to the cotton trade that the chemical market here looks for a big slice of its trade. Demand on export account remains on a moderate level.

Heavy Chemicals

There is only a quiet movement of sulphide of sodium, but values in this section appear to be firming up a little, 60-65 per cent. concentrated solid now being on offer at £10 10s. to £10 15s. per ton, and the commercial product at about £8. For prussiate of soda a fair demand has been reported during the week, and with supplies still on the short side prices are maintained at 4¼d. to 4½ per lb. Moderate sales of bicarbonate of soda are being effected on the basis of £10 10s. per ton. A quietly steady business in alkali is being put through at firm prices, about £6 15s. per ton being quoted for this material. Phosphate of soda keeps steady although the demand at the moment is on quiet lines. Saltcake is moving off in moderate quantities and values are held at the recent increase, £3 10s. per ton being currently quoted. Caustic soda is in fairly good request, with prices steady at from £16 10s. down to £14 10s. per ton, according to quality. A moderate demand for bichromate is being experienced at round 3⅞d. per lb. Inquiry for nitrite of soda has been on the quiet side during the past week and quotations have a somewhat easier tendency at £19 5s. to £19 10s. per ton. Glauber salts are also somewhat slow at £3 10s. to £3 15s. per ton. Chlorate of soda remains rather inactive, but at 3d. per lb. values show no further change. Bleaching powder is still on offer at £8 per ton, a fair demand being experienced. There is not much business passing in the case of hyposulphite of soda, but prices keep steady at about £10 per ton for the commercial material and £15 to £15 5s. per ton for photographic.

Among the potash products carbonate is well held at £26 to £26 5s. per ton, and a fair trade is being done. Caustic potash is also fully maintained at about £29 per ton, demand for this being on a quietly steady scale. For permanganate of potash current demand is slow and prices are easy, B.P. material being quoted at about 6¼d. per lb. and the commercial quality at 4¾d. Bichromate of potash is about unchanged on the week at 4½d. per lb., a quiet business being put through. For chlorate of potash buying interest is restricted with to-day's value at about 3½d. per lb. Yellow prussiate of potash continues firm at 7¼d. per lb., inquiry being steady.

There has been little alteration in the position of sulphate of copper; export demand is maintained at about its recent level, with offers varying from £24 5s. to £24 10s. per ton, f.o.b. Inquiry for arsenic is rather quiet, but values keep firm at round £17 per ton at the mines for white powdered Cornish makes. The lead compounds show little change on balance, although there have been some minor fluctuations during the week; nitrate is quoted at £40 to £41 per ton, with white acetate of lead at £44 10s. and brown at £41 10s., demand being quiet all round. Acetate of lime is dull and somewhat easier at £17 per ton for grey material and £9 for brown.

Acids and Tar Products

Current offers of oxalic acid have fallen off a little, and prices are firmer at about 3⅞d. per lb. Acetic acid continues to meet with a fair volume of inquiry; values keep steady at £37 10s. per ton for 80 per cent. commercial and about £66 for glacial. Citric and tartaric acids are attracting limited attention and quotations are easy at 1s. 3d. and 11⅜d. per lb., respectively.

There is still only a limited quantity of pitch available, and f.o.b. values range from about £6 to £6 5s. per ton. There is not a great deal of demand for solvent naphtha and in this case prices are easy at about 1s. 8½d. per gallon. Creosote oil continues scarce and steady at 8½d. per gallon. Carbolic acid is rather dull, with crystal about unchanged at 6¾d. per lb.

Cyanamide Sale: An Unsuccessful Appeal

On Monday, in the Court of Appeal, the Master of the Rolls and Lords Justices Sargant and Lawrence had before them an appeal by Bergens Privatbank from a decision of Mr. Justice Eve respecting a claim made by them in the voluntary liquidation of the Nitrogen Fertilisers, Ltd.

Mr. Clayton, K.C. (for the appellants) said that the appeal concerned a sum of £4,391, which Mr. Justice Eve held was all that the appellants were entitled to prove for in the liquidation of the Fertilisers Co. The Bank, who were a Norwegian Corporation, claimed that the company was a trustee for them of the proceeds of the sale of 7,060 tons of cyanamide, of which the Bank were pledgers to secure a debt to them. It was sold by the Fertilisers Co. as agents on their behalf and upon the express bargain that the agent company was to be trustee for them of the proceeds of the sale. The Bank claimed that those proceeds still existed at the date of the liquidation and were traceable. Mr. Justice Eve held that the Fertilisers Co. were originally constituted a trustee of the whole of the proceeds of sale, but that as regards 40 per cent. of the amount that position was afterwards abandoned. What happened was that the Fertilisers Co. paid 60 per cent. of the amount to the Bank at once, retaining 40 per cent. to defray, subject to final adjustment, their charges for packing, shipping, freight and storage. That was held by Mr. Justice Eve to take the 40 per cent. out of the trust, which counsel submitted was clearly wrong. In order to get out of the trust there must, he contended, be a new contract, and the only agreement here was that the 40 per cent. would be temporarily for one purpose only—to meet the company's proper costs, charges and expenses of the trust.

The Court, without calling upon Mr. Bennett, upheld the decision of Mr. Justice Eve and dismissed the appeal with costs on the ground that the original trust was modified and that the 40 per cent. of the proceeds of the sale was to be treated as an ordinary mercantile account as between debtor and creditor and taken out of the trust.

Food and Drugs Act Prosecution

At Tower Bridge Police Court recently, before Mr. Powell, Frederick Gillett, oilmonger and Italian warehouseman, of 66, Marsham Street, Westminster, and Frederick Walter King, his manager, appeared in answer to summonses for selling crushed linseed to the prejudice of the purchaser, under the Sale of Food and Drugs Act. Mr. Gillett pleaded guilty, and Mr. Griffiths, solicitor, for the prosecution, asked to be allowed to withdraw the summons against King, and this was done. Mr. Griffiths said that on November 16, 1926, Inspector Nicholson went to defendant's shop in Southwark Bridge Road and asked for a pound of crushed linseed. He was served, and the purchase was subsequently divided in accordance with the Act, and one part submitted to analysis by the public analyst. His certificate showed it to be 50 per cent. deficient in fat. In defence it was urged that the linseed had been in stock some time, and that the oil had been partly absorbed by the paper wrapping. Defendant had warned his assistants not to sell "crushed linseed," but only "linseed meal." As the meal was not sold for food there was no "prejudice to the purchaser." Mr. Powell fined defendant 40s., and ordered payment of 42s. costs.

Sale of Chilean Nitrate Fields

The Acting British Commercial Secretary at Santiago has forwarded copy and translation of Law No. 4,094, which provides for the sale by public auction by the Chilean Government of a large number of nitrate fields within the next two years. Articles 12 and 13 of the law stipulate that the proceeds of these sales shall be set aside for certain public objects, such as survey work, purchase of railway equipment, the construction of a branch railway line, the supply of food to workmen thrown out of employment in the nitrate and coal industries, the creation of an institute for nitrate research, the provision of educational facilities and the formation of workmen's co-operative societies. The copy of the law (which came into force on September 22, 1926) can be consulted by British firms interested on application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1.

Company News

KRUPPS OF ESSEN.—A general meeting held on January 15 approved the annual report for the year ended September 30, 1926, which showed a loss of 2,100,000 marks.

CANADIAN EXPLOSIVES.—A dividend of 1¾ per cent. has been declared for the quarter ended December 31 last, on the 7 per cent. cumulative preferred shares, payable on January 15.

ELLIOTT'S METAL CO.—The usual interim dividend has been declared on the preference shares, payable on February 1, less tax. The directors have decided to defer consideration of a dividend on the ordinary shares until after the accounts are made up for the complete year, which will end on July 31 next.

PHŒNIX OIL AND TRANSPORT CO., LTD.—The directors have declared a second interim dividend of 6d. per share on the fully-paid shares of £1 each and a corresponding dividend on the fully-paid shares of 1s. each, less income tax at the rate of 4s. in the £, in respect of the financial year ended December 31, 1926, payable on February 12.

JUTE INDUSTRIES, LTD.—After provision for taxation and certain credits the net adverse balance at the end of September last is shown to be £638,438. The debit for the current year's trading is £27,040. During the year income from subsidiaries was limited to two sources, all other associates showing adverse balances.

Tariff Changes

ITALY.—The Italian *Gazzetta Ufficiale* for December 11 contains a Decree, dated November 18, which increases the Customs duty on "chemical coatings intended for use as fluxes in the soldering of metals" (ex Tariff No. 713) from 15 to 36 gold lire per 100 kilogs. The *Gazzetta Ufficiale* for December 30 contains a Decree, dated December 26 and effective on December 31, which provides for the application of a coefficient of increase of 0·4 to the import duty on vegetable oils (other than concrete) not specially mentioned in the Italian Tariff (Tariff No. 125h). The effect of this is to increase the duty on such oils from 24 to 33·6 gold lire per 100 kilogs. On seed oils, whether pure or mixed with olive or other oils in any proportion, there is levied, in addition to the Customs duty, a surtax corresponding to the internal manufacturing tax on seed oils.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

INDUSTRIAL CHEMICALS, ETC.—A firm of manufacturers' representatives in Melbourne, with branches in the other chief cities of Australia, desire to obtain the representation of British manufacturers of chemicals and raw materials for all industries, especially tanners and leather dressers, textile industries, woollen mills and knitting mills, rubber manufacturers, glass manufacturers, paint and varnish manufacturers, etc. A representative of the firm is at present in this country, and would be prepared to interview British manufacturers interested. (Ref. No. 41.)

DRUGS, ETC.—A gentleman with a considerable amount of experience in India is returning shortly as a manufacturers' agent, and is prepared to undertake the representation of British manufacturers. (Ref. No. 45.)

DRUG LINES, ETC.—A firm of manufacturers' agents in Toronto, who deal in druggists' sundries and specialities, desire to represent British makers. (Ref. No. 46.)

HEAVY CHEMICALS AND TAR PRODUCTS.—A firm in Berlin desire a British agency for the above. (Ref. No. 58.)

Representation in Ireland

THE representative of a well-known chemical organisation in Ireland is open to undertake the representation of British chemical firms, drysalters, bleaching and dyeworks, etc. Particulars may be obtained on reference to the editor of THE CHEMICAL AGE.

Chemical Merchant's Bankruptcy

THE receiving order in the case of Sidney Norman Ramsey Edge, 31, Market Street, Manchester, trading as S. Waredge and Co., chemical merchant and agent, was made recently on debtor's own petition. The statement of affairs showed a deficiency of £3,508 4s. 7d. Debtor attributed his failure to unfortunate business transactions. Debtor commenced business in partnership with another. This partnership was dissolved in September, 1925, when the debtor took over all assets and liabilities and continued the business alone with unprofitable results. In May, 1925, the firm of S. Waredge and Co. purchased the business of a retail coal merchant. After a few weeks' trading the debtor's partner assigned his interest in this concern without any consideration to the debtor who stated that the business which was only moderately successful before the coal strike had since been very unprofitable, and on October 14, 1926, he sold it for £50. In October, 1925, debtor commenced a partnership with another without capital and traded as paint and varnish manufacturers. Debtor states that the trading of the partnership was unprofitable in consequence of the failure of his partner to introduce business, and in July last the partnership was dissolved and the debtor's partner took over all assets and liabilities.

International Holdings and Investment Co.

A MEETING of the holders of the 7 per cent. participating first mortgage debenture stock of International Holdings and Investment Co., Ltd., was held on Monday for the purpose of considering a proposal for the repayment of the stock on January 31 next, with compensation for the waiving of the participating rights attached thereto. It was stated that the directors had realised the preference shares held in British Celanese, Ltd., which formed part of the total security of the debenture stockholders, and more recently they had considered it prudent to accept an offer made for £425,000 of British Celanese debenture stock, also deposited with the trustees of the debenture holders of the "International Holdings." A total amount of money had accumulated in the hands of the trustees thereby which was greater than the amount necessary to redeem the debenture stock outstanding, and as the cash could now only be invested to earn a small amount of interest, it was but sound finance for the company to utilise it for paying off its debenture debt. The value of the offer which was being made for each £100 of debenture stock was equivalent to £132 1s. 9d.

On a poll being taken the resolution was declared carried, subject to scrutiny of the figures.

Bradford Sewage Litigation

A SETTLEMENT was announced on Tuesday—the sixth day of the hearing—in the action before Mr. Justice Eve, in the Chancery Division, brought by the Bradford Corporation, against Woolcombers, Ltd., and their six associated Bradford companies, claiming an injunction to restrain the defendants from pouring untreated woolcombers' suds into the city sewers so as to interfere with the treatment and utilisation of the sewage of the city. The defendants withdrew their general claim of right to do as they had done; gave an undertaking in the terms asked for in the statement of claim with regard to the injunction; accepted an inquiry as to damages, at the same time stating they were satisfied they would be able to show the Corporation had made a profit; and agreed to pay the costs of the action.

Voluntary Liquidation of Tar Surfacing, Ltd.

IN pursuance of the provisions of the Companies (Consolidation) Act, a meeting of the creditors of Tar Surfacing, Ltd., of 1, Church Street, Boston Spa, was held recently, at the Law Institute, 1, Albion Place, Leeds, when the statement of affairs showed a deficiency, so far as the creditors were concerned, of £4,206 16s. The issued capital of the company was £1,000, and as regards the shareholders there was a deficiency of £5,206 16s. The trading loss last year was attributed to the increased cost of material and the higher wages paid. A resolution was passed confirming the voluntary liquidation of the company, and an advisory committee was also appointed.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgment

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

ECCLES, J., Randal Street, Blackburn, chemical manufacturer. (C.C., 22/1/27.) £50 17s. 3d. December 20.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

RICHARDS (JOHN MORGAN) AND SONS, LTD., London, E.C., patent medicine vendors. (M., 22/1/27.) Registered January 10, £15,000 2nd debentures, with a bonus of 20 per cent.; general charge. *£17,000 debentures. July 7, 1926.

SCHWEPPES, LTD., London, W., mineral water manufacturers. (M., 22/1/27.) Registered January 4, two Land Registry charges (supplemental to Trust Deeds dated August 31, 1903, and May 7, 1909, securing £200,000 A debenture stock of which £40,243 is outstanding); charged on property in Vauxhall Walk, Lambeth, and 20 to 32 (even), Tyers Street, Lambeth. *£349,023. May 27, 1926.

Satisfactions

ASSOCIATED DYERS AND CLEANERS, LTD. (late EASTMAN AND SON (DYERS AND CLEANERS), LTD.), London, W. (M.S., 22/1/27.) Satisfaction registered January 6, £125,000, registered October 11, 1921.

CLOVER PAINT AND COMPOSITION CO., LTD., Liverpool. (M.S., 22/1/27.) Satisfaction registered January 12, £20,000, registered January 30, 1926.

London Gazette, &c.

Companies Winding Up Voluntarily

FARNAN (H. F.) AND CO., LTD. (C.W.U.V., 22/1/27.) E. Cooper, 49, Eastcheap, E.C.3, appointed liquidator, January 12. Meeting of creditors at Winchester House, Old Broad Street, 2.30, Thursday, January 27. Creditors' claims by March 1.

THAMES CHEMICAL CO., LTD. (C.W.U.V., 22/1/27.) By special resolution, December 20, confirmed January 5. Captain A. S. Pine Coffin, Rickmansworth Road, Watford, appointed liquidator. Meeting of creditors at Rickmansworth Road, Watford, on Wednesday, January 26, at 2.30 p.m.; all creditors have been paid in full.

Receiverships

CUMBERLAND COAL POWER AND CHEMICALS, LTD. (R., 22/1/27.) A. C. Vincent, of 13, Queen Street, E.C., ceased to act as receiver or manager on January 6, 1927.

H. N. MORRIS AND CO., LTD. (R., 22/1/27.) V. Walker, of Lloyd's Bank Buildings, King Street, Manchester, ceased to act as receiver or manager on November 27, 1926. (Notice filed January 7, 1927.)

PHOENIX CHEMICAL CO., LTD. (R., 22/1/27.) V. Walker, of Lloyd's Bank Buildings, King Street, Manchester, ceased to act as receiver or manager on December 30, 1926.

RADIUM PREPARATIONS, LTD. (R., 22/1/27.) C. E. Smith, of 43, Old Queen Street, S.W.1, was appointed receiver and manager on December 31, under powers contained in debenture dated March 18, 1926.

New Companies Registered

CELLULOSE REFINISHERS, LTD., 12, Cherry Street, Birmingham. Registered January 12. Nom. capital, £500 in £1 shares. Cellulose refinishers by "Belco" or other process which may incorporate some or all of the processes of nitro cellulose painting. Directors: C. Huckstepp and G. F. Richards.

CITY CHEMICAL AND COLOUR CO., LTD. Registered in Dublin January 10. Nom. capital, £6,000 in £1 shares. Objects: Manufacturers, compounders, millers and refiners of and dealers in paints, enamels, polishes, toilet powders, disinfectants, etc. Subscribers: J. O'Donovan, 13, Grace Park Gardens, Dublin, merchant, and M. Garrett.

J. A. DUNCAN AND CO., LTD., 30, George Square, Glasgow. Registered January 12, in Edinburgh. Nom. capital, £1,000 in £1 shares. Manufacturers of and dealers in materials for washing or cleaning, boot and furniture polishes or creams, drysalters, etc. Directors: J. B. Paterson, J. S. Sutherland, J. S. Paterson, and J. A. Duncan.

THE INSTITUTION OF FUEL TECHNOLOGY, 202, Abbey House, Victoria Street, London. Registered on January 15 as a company limited by guarantee and not having a capital divided into shares, with an unlimited number of members each liable for £1 in the event of winding up. The income and property of the Institution, whencesoever derived, are to be applied solely towards the promotion of its objects. The word "limited" is omitted from the title by licence of the Board of Trade. The objects are to promote, foster and develop the general advancement of the various branches of fuel technology, as an end in itself, and as a means for furthering the more efficient production and scientific and economic utilisation of fuel of all kinds for industrial, commercial, public, agricultural, or other purposes, etc. Lord Aberconway, Professor H. B. Dixon, Sir Robert A. Hadfield, Col. Sir William R. Smith, Lord Weir, and D. Milne Watson are vice-presidents. Secretary: L. C. Harvey.

JOHN PENROSE, LTD., Radium House, Radium Street, Manchester. Registered January 13. Nom. capital, £250 in £1 shares. Manufacturing, operating, pharmaceutical, and analytical chemists, confectioners' sundriesmen, druggists, drysalters, manufacturers, merchants and agents for fruit essences and essential oils, etc. Subscribers: G. P. Webster, F. C. Toulmin.

SOLVENT PRODUCTS, LTD. Registered on January 13. Nom. capital, £200,000 in 10s. shares. Manufacturers, refiners, importers and exporters of and dealers in alcohol of all descriptions, fusel oil, carbon dioxide, yeast, ether, methylated spirit and all by-products thereof, druggists, drysalters, oil and colourmen, etc.; to adopt four agreements: (1) with the Constructive Finance and Investment Co., Ltd.; (2) with H. D. Lorimer; (3) with C. G. G. Hayman; and (4) with H. D. Lorimer, D. H. O. Edmunds and C. G. G. Hayman. Solicitors: Linklaters and Paines, 2, Bond Court, Walbrook, London, E.C.4.